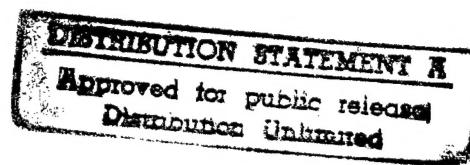


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9 January 1985



# USSR Report

ECONOMIC AFFAIRS

EKO: ECONOMICS AND ORGANIZATION  
OF INDUSTRIAL PRODUCTION

No. 9, September 1984

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9 January 1985

USSR REPORT  
ECONOMIC AFFAIRS

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OF INDUSTRIAL PRODUCTION

No. 9, September 1984

Except where indicated otherwise in the table of contents, the following is a complete translation of the Russian-language monthly journal EKO: EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA published in Novosibirsk.

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## IMPORTANCE OF COMPREHENSIVE WOOD PROCESSING NOTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 3-4

[Introduction to following articles on Carpathian wood industry:"Comprehensive Processing of Timber Wealth in the Carpathian Region"]

[Text] An important element of the course adopted by the party to intensify and increase the efficiency of industrial production is comprehensive utilization of raw materials. Reserves in the timber industry are especially significant. The November 1983 meeting of the Politburo of the CPSU Central Committee directed attention to this. It was pointed out that new approaches to planning, management, and improvement of methods of economic activity and to the introduction of achievements of scientific-technical progress into the sector are needed. The work of the Carpathian Logging Production Association imeni 60-letiya Sovetskoy Ukrayny is an example of this approach. This association provides an example of genuinely intensive economic management. Its successes in this direction are based on several elements.

Above all there is the balanced structure of the association and its comprehensive nature, that is, the interrelationship and interdependence of the individual elements. Next there is the focus on the final result, the output of final product. A great deal of significance is attached to more fully comprehensive processing of timber raw materials and to creating no-waste production in practice on the basis of the achievements of scientific-technical progress.

The materials published below are devoted to the experience of the Prikarpates Association. We believe that it will be of interest not only to representatives of the timber and wood-processing sectors, but to other sectors of the nation's economy as well.

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INTERVIEW WITH I.I. SKIBA, FORMER FIRST SECRETARY, IVANO-FRANKOVSK OBKOM

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in  
Russian No 9, Sep 84 pp 4-13

[Interview with I. I. Skiba, former first secretary of the Ivano-Frankovsk Obkom of the Communist Party of the Ukraine, now first deputy chief of the department of agriculture and food industry of the CPSU Central Committee, by EKO correspondent L. Shcherbakova: "New Methods of Economic Activity Are Being Introduced Here"]

[Text] [Question] Ivan Ivanovich, the experience of the Prikarpates Association in the comprehensive utilization of timber resources is well known in the country. What served as the impetus to establish comprehensive timber enterprises in the oblast?

[Answer] The Carpathians stand before us today in all the magnificence of their lush forests. Forestry is being efficiently conducted there and the timber industry is being intensively developed. And it is difficult to believe that little more than 2 decades ago the situation was precarious. By the late 1950's, the forests in the Carpathians were half cut down and forest renewal was not being carried out. This had a very negative effect on the climate, atmosphere, water balance, and condition of the growing forest, and in particular led to deterioration of the soil over a vast territory and to extensive wind breakage and blowdowns. Such were the consequences of prolonged economic activity -- until 1939 -- by capitalist lumbermen who greedily cut down the most valuable forests over a large territory with no concern for their renewal. Enormous harm was done to timber wealth in the war years. Although forest renewal work was carried out in the early postwar years, its scope was inadequate. And not only because there wasn't enough capital. Departmental barriers were a hindrance. Judge for yourself: in the oblast at that time there were more than 40 forestry enterprises [leskhозes], logging enterprises [lespromkhозes], and other organizations and enterprises of various ministries which, guided by departmental interests, were primarily engaged in logging and frequently seriously violated the rules of forest utilization. As matters stood, one could hardly expect that the situation would soon be corrected.

However, the situation demanded that urgent measures be taken to put the forests in order, and this meant fundamental rather than partial ones. These questions were discussed in party, Soviet, and economic organs. Various proposals were made but one thing was clear to all: in order to solve the problem completely and on a principled basis, above all the structure of management of the sector had to be changed so there was just one master of the forest.

By the initiative of the Ivano-Frankovsk party obkom, supported by the CPSU Central Committee and the Central Committee of the Ukrainian Communist Party, forestry and the lumber and wood processing industry were combined both in our oblast and in the neighboring Transcarpathian and Chernovtsy oblasts in 1959. Instead of many small logging and wood processing operations, large enterprises were created -- forestry combines which were responsible for the entire cycle of work in the forest, from gathering seeds, raising seedlings, planting, and crop tending to felling and processing timber raw materials and producing the final product. These enterprises became the genuine masters of the forest, with a real interest in multiplying timber wealth and in its prudent, efficient utilization.

[Question] An All-Union Conference in 1980 approved the experience of the Ivano-Frankovsk party obkom on mobilizing the collectives of enterprises and organizations of the timber and wood processing industry to use local timber resources efficiently. At the same time unused reserves were pointed out and new tasks were posed for party organizations and collectives. What are the directions for the further development of the forestry complex in the oblast?

[Answer] The comprehensive "Les" scientific-production target program has now been developed and is being implemented. After a thorough discussion, the measures included in this program were ratified by the joint decree of the collegium of the USSR Minlesbundrevprom [Ministry of Timber, Pulp and Paper, and Wood Processing Industry] and the Ivano-Frankovsk party obkom buro. Realization of the measures will allow the volume of output production to be increased by 53 percent by the end of the current five-year plan as against 43 percent in the past five-year plan; this includes increasing the production of furniture and particleboard by a factor of 1.5 and bringing the industrial utilization of wood for the association as a whole up to 96 percent.

In the struggle to achieve the goals presented party committees and primary party organizations are developing the initiative and socialist enterprise of the sector's workers in every possible way, and are helping to disseminate progressive experience and patriotic initiatives. In particular the party obkom approved the initiatives of the collectives of the Nadvornaya Forestry Combine which developed socialist competition to introduce no-waste production, the Kolomyia Forestry Combine which developed socialist competition to achieve the highest rate of successful growth for wood crops, and the Snyatyn Forestry Combine which developed socialist competition to produce furniture of the highest quality category only.

Since the beginning of this five-year plan, all allocated capital investments have for the most part been incorporated by the in-house method, which has substantially strengthened the material-technical base of the principal

sectors of the forestry complex. In particular, 378 kilometers of mountain logging roads have been laid. In combination with measures to introduce progressive technology for working cutting sites and with mechanization of work, this has made it possible to increase the volumes of wood procurement, including 382,000 cubic meters of wood felling waste and low grade wood from forest maintenance cutting and 510,000 cubic meters of wood processing waste.

The set of social measures is an inseparable component of the "Les" program. In the first two years of the five-year plan, the proportion of workers engaged in mechanized labor rose significantly. During this period planned housing, children's preschool establishments, trade and public catering enterprises, and other important facilities have been introduced for the sector's workers. Using sociocultural and domestic capital the cost of food has been reduced and medical services for workers and members of their families have been improved. Transport services for the association's workers have gotten better as has the supply of building materials for individual residential construction. All this is having a positive effect on the people's mood and on their labor.

This does not mean, however, that everything is going smoothly in the collectives. There are difficulties, problems, and bottlenecks. The mechanization of labor intensive processes, above all in logging camps, must be accelerated and the production of new types of consumer goods and furniture must be incorporated.

[Question] As we know, the experience of the Prikarpates Association in the comprehensive utilization of raw materials is being disseminated and developed in the oblast. Tell us about this.

[Answer] The experience of the association's workers was thoroughly studied by party organizations and economic managers and specialists of other sectors of industry. Thus, by more efficient utilization of milk the dairy industry association obtains 227 rubles worth of output from every processed ton of milk as compared to the average republic indicator of 209 rubles. In the meat industry association the utilization of raw materials during meat processing has increased by one-third and reached 81 percent since the beginning of the five-year plan period. In the food industry no-waste technology is being introduced for processing fruits and berries. Formerly fruit processing residue was at best fed to livestock. Now it is made into fruit-berry meal which is replacing up to 30 percent of the sugar in the candy industry.

One of the major national economic problems is comprehensive processing of polymineral ores on whose basis the oblast's largest chemical enterprise, the Kalush Khlorvinil Production Association, operates. This association already produces 46 items of valuable output, some of it unique. They are metallic magnesium, silica powder, concentrated potash fertilizers and chemical pesticides, plastics, perchlor carbon, hydrochloric acid, chlorine, caustic soda, and many others. The association's specialists found an efficient use for 6,000 tons of waste products from local treatment of run-off from the production of polyvinyl chloride resin -- they have begun to use it as a binding component in road construction. This gives an annual economic effect of 250,000 rubles. The bleaching agent "Belizna" and containers for it are

produced from production waste. Comprehensive processing of natural resources is becoming an economically beneficial sphere of activity, and a great deal of attention is being devoted to it.

This year, for example, removing organic impurities from salt is to be done for the first time in domestic experience. This will make it possible to significantly reduce the need for imported salt for the current production of chlorine and caustic soda. Work on a technological process for using hydrogen obtained as a by-product of this production process as fuel is being completed. This will make it possible to save 1.2 million cubic meters of natural gas a year. In the same chlorine and caustic soda shop reconstruction of the technological waste water treatment system was carried out; this made it possible to completely eliminate the use of fresh water to dissolve salt and eliminate waste water in this production process for the first time in the country. The effect was a savings of 700,000 cubic meters of fresh water and 4,200 tons of industrial salt a year. A question of prime importance is comprehensive utilization of ore and the conversion of the association's chemical factory to a full dissolving system. Persistent work is being done to solve this question.

Nonetheless, I will note that the introduction of no-waste production would progress much faster and the association's work today would already be much more efficient if in solving future problems of its development, the association planned to supply its own raw materials on the basis of the complete processing of potassium ores and waste from manganese production. However, the sequence of introduction of its capacities, in conformity with the ratified plan for the association's development until 1990, has been violated. Those production facilities whose output or by-products must serve as the raw material for a number of other facilities are to be introduced after these other facilities are built. Because of this, from the start we have a programmed disproportion between the need for raw materials and assignments to produce output and our dependency, for some years, on deliveries of raw materials from the outside; but because these deliveries are frequently underfulfilled, we have underloading of particular capacities, especially those which produce mineral fertilizers and magnesium.

On the whole throughout the oblast, measures aimed to improve the utilization of resources have made it possible to save about 15,000 tons of rolled ferrous metals, more than 10,000 tons of cement, 280,000 square meters of fabric, 500 tons of leather raw materials, and about 70,000 kilowatt-hours of electricity in the first 2.5 years of the current five-year plan.

[Question] In your opinion, what is holding back the conversion of enterprises to comprehensive processing of raw materials?

[Answer] Unfortunately, in the system of economic indicators established for enterprises, indicators of comprehensive processing of raw materials have still not taken their proper place. A system to determine them has not been methodically worked out in many production facilities. Comprehensive utilization of resources is held back by the lack of developed technology as well as necessary equipment. And much depends here on the position of the ministries and departments. It is difficult for many enterprises to set up

no-waste or low-waste production without their active assistance, but sector headquarters are in no hurry to help them do it.

Undoubtedly much can be done by the enterprises themselves -- experience confirms this. There are many examples in our oblast. But in order for work in this direction to actually go forward on a wide front, it must be preceded by incentive as the primary condition of efficiency of the economic mechanism. But the price-setting and material incentive system in operation today does not adequately encourage collectives to fully utilize the waste products from their own production for technological purposes, to say nothing of sending it to enterprises in other sectors for further processing. The organization of comprehensive processing of resources and the introduction of no-waste production as a rule entail considerable difficulties. Technical solutions must be found and considerable effort, time, and means must be spent to embody them. Much care must be taken. There is a risk. Therefore many economists prefer not to burden themselves with extra worries and take the beaten path. In the timber sector too, especially in the beginning, there were those who sat on the fence and waited. Nonetheless, work on a unified complex reinforced by strict demand and the main thing -- a well thought-out system of organized measures and tangible economic benefit -- forced everyone to investigate and act. And this is properly the point. The question cannot be solved by directives; we must create conditions which would stimulate initiative and enterprise and, conversely, punish inertia morally and materially.

And there is one other thing I would like to mention. The fact that today there are in essence no territorial interdepartmental work organs which engage in keeping records and systematizing data on the existence of waste products at enterprises of different sectors, determining the optimal ways and developing practical measures to use these waste products, and coordinating common efforts for this purpose has a negative effect on the level of comprehensive processing of raw materials. Here is an example. I have already said that in the timber sector we have both large capacities for processing wood raw materials, including waste products, and a great deal of experience in this work. But other sectors of the oblast's economy have none, and therefore the tens of thousands of cubic meters of wood waste which they produce is dead capital, vanishes, and is destroyed. It was decided to put an end to this discrepancy. A joint decree was adopted by the obkom and the obispolkom which obliges all economists to take account of these raw materials and sell them to the Prikarpattia Association's enterprises for processing. Last year some 7,000 cubic meters were recycled. Rather little, to be sure. In any case, less than the established assignment.

But why is the adopted decision "slipping" to some extent? The oblast organs charged with this matter are working on it, so to speak, by combining jobs. They have enough other worries and these questions are automatically relegated to the background. And many economic managers are not enthusiastic. They often complain about the shortage of transport and loading facilities or some other circumstances. But as a rule these are only excuses. In reality what is lacking is something else -- incentive. Most enterprises and organizations would find everything needed if in exchange for low-grade wood and waste products they were to receive, for example, a certain share of the output from

its processing -- particleboard. Nonetheless, the higher organs have not yet managed to solve this problem, although it should have been done long ago.

[Question] We would like to summarize our conversation. How do you evaluate the possibility of further expansion of the comprehensive approach to the timber sector?

[Answer] An all-Union conference was held in our oblast in 1980, per instructions of the CPSU Central Committee. Managers and specialists of enterprises, organizations, and scientific research and design institutes took part. They became familiar with the Prikarpates Association's work (about 50 groups from different rayons of the country visited us for this purpose). The overwhelming majority of the comrades announced unequivocally: this is the only correct path which sooner or later the entire forest industry will follow. And it must be widely disseminated in the country, first to forest-poor regions in the European part, including the Ukraine. This approach is also dictated by the directive document "Basic Directions for the Economic and Social Development of the USSR in 1981-1985 and During the Period Until 1990" which says: "Organize comprehensive enterprises for timber cultivation, felling, and processing of wood."

However, the geography of the comprehensive conduct of forestry management and the timber and wood-processing industry is presently being expanded slowly. And not only because there is a lack of initiative locally. The appropriate USSR and republic organs must put in their weighty word here.

It must be said that the work of comprehensive forestry enterprises would be more efficient if questions of the technical re-equipping of the sector on the basis of the latest achievements of scientific-technical progress were solved promptly and on the necessary scale. In particular, a network of logging roads must be developed to more fully incorporate forest areas and draw more cuttings from forest maintenance into the wood balance. The construction of these roads has been held back by lack of road equipment, means of transport, and building materials. We must increase the number of mobile cutters for producing industrial chips right at the felling sites; this would substantially reduce expenditures for loading work and transportation.

Furniture production facilities are not receiving the needed quantity of cardboard boxes; this leads to unplanned use of cut timber and restricts the production and delivery to consumers of prefabricated furniture. These and other questions whose time has come must be solved.

There should be a nondepartmental State Forest Inspectorate under the USSR Council of Ministers to monitor the proper management of forestry and logging in comprehensive forestry enterprises of the republic and the country.

[Question] And finally: what, in your opinion, would encourage comprehensive and more efficient forestry in the Carpathians?

[Answer] The Carpathian Region includes the territories of the Transcarpathian, the Ivano-Frankovsk, Lvov, and Chernovtsy oblasts. There is a developed scientific and design base here (the Lvov Forest Technical

Institute, the Ivano-Frankovsk Branch of the Ukrainian Scientific Research Institute of Forestry, the planning and design technological institute of the UkrSSR Ministry of Timber Industry, and others). To a great extent their efforts are uncoordinated because of their different departmental affiliations. The question of creating a "Karpata" unified scientific-production complex should be studied. It should be developed in line with and even with priority over measures to conserve the environment and increase timber wealth. This would serve the common cause and the interests of the country's economic complex well.

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## IVANO-FRANKOVSK OBLAST PRIKARPATLES COMBINE SUCCESSES REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 13-24

[Article by V. F. Veres, Hero of Socialist Labor, general director of the Carpathian Region Logging Production Association imeni 60-letiya Sovetskoy Ukrayny: "A Unified Forestry Complex" Passages rendered in all capitals printed in boldface]

[Text] The Prikarpatles Combine was organized in 1959 in Ivano-Frankovsk Oblast on the basis of forestry enterprises, logging enterprises, wood-processing plants, furniture factories, and rayon industrial combines of various ministries and departments. The Combine did not simply take over forest areas which had degenerated and weak, scattered industrial enterprises. To some degree, we were compelled to decide the fate of the Carpathians, restore this unique natural complex, and increase its wealth.

### What We Began With

The primary tasks which the new forestry complex had to perform were determined: reduction of the volume of cutting to the size of the calculated annual cut; purposeful work to preserve forests and to plant them in vacant areas; and, reconstruction and expansion of facilities for recycling wood, waste products from logging, saw milling, and wood working, and low-grade wood from forest maintenance cutting.

Performing these tasks was possible only after fundamentally reorganizing the structure of the enterprises which were part of the complex. We set out TO ORGANIZE LARGE COMPREHENSIVE FORESTRY ENTERPRISES (FORESTRY COMBINES) WHICH COMBINED THE FORESTRY AND THE LOGGING AND WOOD-PROCESSING INDUSTRY. Of course, this was no simple matter. We had no experience in setting up such comprehensive enterprises, especially since before being consolidated they belonged to different sectors: forestry, the logging sector, the wood-processing sector, and others.

Each of the enterprises which was to become part of the forestry combine was independent, with its own management apparatus and differences in methods of planning its activity (development of production programs and assignments, the

consolidated plan, labor productivity, and so forth). Current expenditures for production were financed from different sources: forestry was financed through the state budget while the rest used their own working capital. It was necessary to maximally reinforce the interrelations among production subdivisions and determine their functions as well as the optimal sizes of the forestry combines.

THE FORMATION OF THE PRODUCTION STRUCTURE OF THE FORESTRY COMBINES WAS BASED ON THE INTERRELATIONSHIP AMONG THE PROCESSES OF PRIMARY PRODUCTION: FOREST RENEWAL AND FOREST CULTIVATION -- FOREST EXPLOITATION -- PROCESSING AND RECYCLING OF WOOD. The production units adopted were the following: for forestry -- forest districts; for logging -- forest posts; and for wood-processing -- shops. In addition, motor transport and storage and repair facilities were strengthened and combined. Vehicle columns began to serve all divisions of the comprehensive enterprises. The creation of one enlarged machine repair shop and one construction-repair section made it possible to concentrate technical means and the work force, improve the organization of repair work, and on this basis improve service to all the divisions of the enterprise.

In many cases, former logging enterprises' warehouses for finished output became warehouses for raw materials for the wood-processing facilities of forestry combines at the same time. This improved material-technical supply and maneuverability when regulating stores of raw materials.

Several forest districts, forest posts, and wood-processing shops were included in a comprehensive enterprise. A sphere of activity was established and the functions and production ties with other divisions were determined for each division set up. This made it possible to strengthen the production-technical and organizational unity of the forestry combines.

At the time when the forestry combines were set up, wood-processing was under-developed in our area. In 1960, 25.4 percent of the workers were engaged in wood-processing, 64.5 percent in forest exploitation, and 10.1 percent in forestry. More than half the timber was sent to consumers as round-timber. We began to increase the capacities of the wood-processing industry and develop chemical and chemical-mechanical wood processing at an accelerated rate. New shops were built and existing ones underwent reconstruction. Today the ratio of the number of workers in enterprises of the Prikarpatles Production Association is: wood-processing sector -- 52.9 percent; logging sector -- 28.3 percent; and forestry -- 12.7 percent.

The development of wood-processing facilities made it possible to even out capacities of production divisions and on this basis to insure complete and thorough processing of cut wood and rational use of forest resources. [Paragraph printed in boldface]

It was possible for us to undertake serious work to renew the forests only after the forestry combines were set up. This took about 8 years. Today we have 223,000 hectares of forest planted after the war. There is almost no spontaneous renewal. Frequently we had to restore the soil first and only then do the planting. People carried soil to the mountains in buckets and

containers and planted forests in places where nothing had grown before. As a result, the forested area of the oblast was even 35,000 hectares larger than before the war. The volume of logging has been stabilized since 1968.

The economic efficiency of measures to improve the management structure of the association is apparent. Thus, we reduced the number of administrative-management personnel by 665 people by improving the structure of production management during the 10th Five-Year Plan (we reduced it by 267 in 1981-1983). Expenditures to maintain the management apparatus were reduced by 1,462,000 rubles during the 10th Five-Year Plan and by 731,000 rubles in 1981-1983.

#### Prikanpates Today

Today 12 forestry combines, 3 furniture combines, a plant for producing nonstandard equipment, a construction mobile mechanized column, and the Carpathian State Nature Park are included in our association. We incorporate an average of 20 million rubles worth of capital investments a year.

Only certain forest maintenance cuttings are financed through the budget. We charge expenditures for other cuttings to the logging account. About 50 percent of the wood removed is wood from forest maintenance cuttings. We supply almost all of our own wood and import only mahogany and some of the sawlogs. Forestry allocations total about 9 million rubles a year, or 18 rubles per hectare.

The forestry combines can be divided into the following three groups according to their production specialization:

Enterprises which conduct in-depth primary processing of wood, with the exception of furniture production. Saw milling, pattern cutting, drying, and wood processing shops are here. The commodity output of wood processing is different types of rough-cut and finished articles, packaging, construction parts, and other articles which do not require finishing. Examples of these enterprises are the Verkhovina and Vorokhta forestry combines.

Forestry combines where furniture predominates in the total volume of output. They also have saw mill and pattern cutting shops here. Nonetheless, the main share of output of these shops goes for the production of furniture and rough-cut articles. Some forestry combines of this group, for example, the Bolekhov and Solotvin combines, produce planed and stripped veneer.

Enterprises which have large particleboard shops. They have saw milling-pattern cutting shops which produce rough-cut articles, packaging, and so forth. Nonetheless, the basic output of wood-processing at these forestry combines is particleboard and fiberboard. They are the Nadvornaya, Vygoda, and Broshnev forestry combines.

I WOULD SAY THAT THE MAIN STRATEGIC PROBLEM WE ARE TRYING TO SOLVE IS THE PLANNED INCREASE IN TOTAL VOLUMES OF INDUSTRIAL PRODUCTION COMBINED WITH STABLE VOLUMES OF LOGGING AND SIMULTANEOUS REDUCTION IN SAW MILL OPERATIONS. This is being accomplished through more complete and comprehensive utilization of raw and processed materials and the introduction of no-waste technology. Today the level of utilization of wood pulp is at 95.4 percent.

Of course, only a large, well-equipped enterprise which has a solid construction base and a powerful energy system can solve complex problems of intensifying the recycling of raw materials and is capable of performing important social tasks. THEREFORE, WE ARE ENLARGING ENTERPRISES AND CONCENTRATING PRODUCTION. There is not one enterprise in the association with less than 1,500 people, whereas in 1975 there were four. In 1975 one industrial enterprise produced an average of 7.3 million rubles worth of commodity output; in 1983 it produced 17 million rubles worth, that is, the level was increased by a factor of 2.3. Formerly, 16-18 of our enterprises were engaged in saw mill operations at 43 points; today only 8 enterprises are. And we make not only rough-cut but finished furniture articles there as well. And what is also important -- we have been able to utilize wood waste products more extensively. Now saw dust and chips remain at the enterprise and are used for the production of particleboard. But if the board is not produced there, waste from saw milling is sent to other forestry combines. Thus, a shop to produce plyboard completely from saw milling waste with a capacity of 10,000 cubic meters operates at the Osmoloda Forestry Combine. Even taking transportation into account, this is advantageous for us. Whereas in 1975 we imported 437,000 cubic meters of wood, including from Siberia, and shipped out 331,000 cubic meters; in 1982 deliveries to us were reduced to 130,000 cubic meters and shipments to 215,000 cubic meters. Consequently, with increased production of output, shipments of wood now predominate by a factor of 1.7 in the association.

WORK ON TECHNOLOGICAL SPECIALIZATION OF ENTERPRISES IS BEING CONSISTENTLY CARRIED OUT IN THE ASSOCIATION. Three enterprises specialize in producing particleboard, two specialize in plyboard with a special surface, and so forth. The highest level of specialization -- 99 percent -- has been achieved at furniture enterprises, while the level fluctuates from 45-75 percent at the forestry combines.

The total volume of furniture production for the association as a whole is 131 million rubles. Since the beginning of the current five-year plan, it has been increased by 19.5 million rubles through the application of organizational-technical measures. Today object specialization in furniture production is for the most part complete: the Bolekhov Forestry Combine produces bedroom sets and special order furniture; the Prikarpatskiy Furniture Combine produces living room furniture; the Delyatin Forestry Combine produces kitchen furniture; and the Kolomyya Forestry Combine produces children's furniture for preschool institutions. Production of upholstered furniture is centered in the Broshnev Forestry Combine and the Prikarpatskiy Furniture Combine. The output of furniture per 1 square meter of production area increased by 30 percent in 1981-1983 alone.

EVERY YEAR COOPERATION AMONG OUR ENTERPRISES INCREASES THROUGH INCREASED DELIVERIES OF ROUGH-CUT AND FINISHED FURNITURE ARTICLES, FURNITURE PARTS, OR SHEET MATERIALS, BENT LAMINATED PARTS, FRIEZED, AND OTHER OUTPUT. In order to regularly supply raw and processed materials for production and monitor the fulfillment of cooperative deliveries, dispatching services have been set up at the enterprises. The cost of semi-finished goods and assembly components delivered to the enterprises through interdepartmental cooperation amounts to less than 15 percent of the total yield of output, while for specialized furniture enterprises it is less than 20-25 percent. Thus, the Nadvornaya Forestry Combine specializes in production of finished furniture parts from laminated particleboard and finished squared furniture parts for chairs. This made it possible to fully convert the Delyatin and Kolomyya forestry combines to finishing and assembly. Technological and object specialization help concentrate similar waste products from production. We are now able to plan their utilization on a more substantiated basis.

So, the association includes comprehensive enterprises equipped with modern domestic and imported equipment. Here too we had to try to solve complex problems of supplying them with tools, spare parts, and equipment. We could not count only on centralized supply. The fact that through the territorial Gossnab organs we receive, for example, only 20-25 percent of the tools we need illustrates the level of supply. Buying spare parts for imported equipment in foreign currency is very expensive. THEREFORE, ONE OF THE PRINCIPLES OF OUR ECONOMIC ACTIVITY HAS BECOME AN ORIENTATION TO OUR OWN FORCES. A shop to manufacture tools has been built in the Ivano-Frankovsk Forestry Combine. It specializes in producing cutting tools for particleboard and fiberboard plants as well as for automated production lines of the sector's furniture enterprises. The Lesdrevmash Plant has been built in Broshnev. One of its tasks is the capital repair of electric motors for the association's enterprises (the plan is 1,200 electric motors a year). In 1982 nonstandard equipment worth 435,500 rubles (64.4 percent of the requirement) was manufactured for mechanized production processes, including 274,100 rubles worth for the association's start-up projects.

ALL THIS HAS BEEN MADE POSSIBLE ONLY THROUGH COOPERATION WITH SCIENCE. It concerns both the development and embodiment of important programs for the whole association (for example, the reconstruction of the Broshnev Particleboard Plant carried out according to a design developed by the Ivano-Frankovsk Planning and Design Technological Institute of the UkSSR Ministry of Timber Industry), and the designing of machine tools and accessories. Our ties with the Lvov Forestry Technical Institute have been found to be especially effective in the second direction.

#### The Key to Success Is a Sound Personnel Policy

We believe that the stability of personnel is the most fundamental thing for any enterprise. This, plus solid labor discipline and increased labor productivity. In the years of existence of the forestry combines, our labor productivity has almost tripled. As is well-known, the country's timber

industry is "growing old," and personnel turnover is especially high there. It has not had an effect on us as yet. Worker turnover in the association totaled 8.5 percent in 1983, while for engineering and technical personnel it was 5 percent, and in some places even 3 percent.

A system of work with personnel has taken shape in the association. Above all it involves creating good living conditions for the people. The construction of housing, facilities for trade, daily life, and culture, and others is carried out using our own and obispolkom capital. The base for construction is our own plant for reinforced concrete articles and designs in Nadvornaya. It produces more than 25,000 cubic meters of output a year. We build several types of housing, both multi-story and detached houses. Last year we put into operation a residential building built using cooperative construction means. We take into account the fact that people here in the Carpathians like to build. Therefore we are developing individual construction as much as we can. We give the people the design, the place, and the material and they themselves erect the houses and each one tries to make it better and nicer than his neighbor. And we only encourage this endeavor.

Fine domestic service complexes have been built in Delyatin, Solotvin, and Bolekhov. There are a dining hall, a store, a post office, a pharmacy, a savings office, and repair shops. Each settlement has a house of culture or a club and sport facilities. In Vygoda, Bolekhov, and near Ivano-Frankovsk there are public health centers where one can rest and take medical treatment, either while continuing work in production or not. Health centers are in operation at all enterprises. There is a Pioneer camp with room for 500 people; after reconstruction it is being used as a recreation lodge for our workers during school hours. We have shares in the Morshin and Tryskavets sanitariums and we receive 300 passes from each of them every year. Recreation bases with room for 1000 people are in operation on the Black Sea.

We attach a great deal of significance to vocational orientation work among children, beginning in kindergarten. We equip kindergartens with small machine tools and tools. We give the children semi-finished articles out of which they assemble very simple toys. One of them was a model of a car given to me by the children. This is a very precious gift for me. We work more seriously with the school children and the help we receive from them is sound. This is primarily work with 50 school forest districts, where 3,490 pupils study and conduct forestry work on 7,700 acres. The school children also help us a lot in gathering berries, mushrooms, and the like.

If a young man finishes school and wants to continue his education in a VUZ, we send him to study in the enterprise's area at the Lvov Forestry Technical Institute and other higher educational institutions. We have 410 students in day-time divisions and 860 in extension divisions today. We send talented and diligent children of our own workers to study since we are convinced that when they return to us they will like their work.

Instruction in work occupations is conducted at the Ivano-Frankovsk Vocational Technical School, which graduates 200-240 cabinetmakers and woodcarvers a year, and at forestry technical and forestry schools. In addition, 1,800-1,900 people are taught in production. About 5,000 workers systematically

increase their qualifications in production, while 70 people do so at the Ivano-Frankovsk Forestry Technical School and at the Moscow Experimental Particleboard and Parts Plant with leave from production.

Production is not standing still. Only a person armed with contemporary knowledge can efficiently attempt to solve its problems. Above all this concerns engineering and technical personnel. Therefore, 350-380 engineering and technical workers from the association study in schools to raise qualifications in Moscow, Kiev, and Lvov every year. About 230 people study at the Ivano-Frankovsk Educational Center of the UkrSSR Minlesprom [Ministry of the Forestry Industry].

And there is one other thing I would like to say. In contemporary conditions it is impossible to organize a stable collective without fostering a love for one's native kray and enterprise and pride in them. Rest and meditation rooms serve these purposes; in some places they have been converted into veritable museums which tell about the beauty and wealth of the Carpathians and into museums of labor glory. We build all large projects (domestic services buildings, houses of culture, kindergartens, schools) using national motifs both on the outside and the interior. Our forest districts where it is demonstrated what national Huzul craftsmen are capable of are especially beautiful. Some people believe that we spend money for this to no purpose. But ultimately the most valuable thing that we have is people. Concern for the person is always repaid with interest.

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PRIKARPATLES PRODUCTION STRUCTURE, ECONOMIC INDICATORS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 p 25

[Statistical illustrations on Prikarpates Association]

[Text] Prikarpates. Structure of Production, percentage of total

	1960	1965	1970	1975	1980	1983
Forest Exploitation	52.9	42.8	23.2	17.6	12.8	13.4
Wood Processing	44.3	54.7	72.7	77.9	83.9	83.7
Of Above, Furniture Production	16.9	37.1	49.6	54.7	53.8	43.9
Forest Chemistry	1.5	1.6	2.4	2.9	1.9	1.6
Metal Working	1.3	0.9	1.7	1.6	1.4	1.3

Prikarpates. Some Indicators of the Association's Economic Activity

Indicator	1970	1975	1980	1982
Labor Productivity, Rubles Per Worker	3,898	5,270	7,131	7,997
Expenditures Per Ruble of Commodity Output, in kopecks	80.40	90.32	88.19	84.67
Profit, millions of rubles	13.892	13.313	22.229	38.067

[Table continued, next page]

[Table continued]

Indicator	1970	1975	1980	1982
Fixed and Working Capital, thousands of rubles	55,369	95,506	150,496	172,330
Of Above, Fixed Productive Capital, thousands of rubles	48,125	80,359	124,674	134,933
Output-Capital Ratio, rubles/rubles	2.06	1.73	1.61	1.70
Proportion of Output with Mark of Quality in Total Volume of Output Subject to Certification, percentage	--	25.0	42.4	61.5
Dynamics of Labor Intensity in Wood Processing, man-hours per ruble of commodity output	0.029	0.026	0.017	0.016
Increase in Production Capacities for Production of Furniture Through Organizational-Technical Measures, thousands of rubles	1,193	1,401	2,580	7,560

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## NO-WASTE PRODUCTION AT PRIKARPATLES REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 26-30

[Article by V. O. Pavlik, deputy general director of the Prikarpatles Association: "Waste Products and Reserves." Passages rendered in all capitals printed in boldface]

[Text] Our goal for the 11th Five-Year Plan is to create almost complete no-waste production. This task is being resolved in several directions:

increased utilization of waste products for industrial output and consumer goods;

increased useful yield of basic output through improved equipment and production technology;

replacement of scarce wood pulp with sheet wood materials (particleboard and fiberboard)

reduced materials consumption of wood items through their improved design.

We will dwell on each of these in more detail.

A great deal of waste is bound to appear when useful output is produced. For example, 4.05 cubic meters of coniferous round timber or 6.15 cubic meters of hardwood round timber must be processed to manufacture 1 cubic meter of finished furniture parts. The need arises to eliminate waste. THE IDEAL METHOD IS ITS RECYCLING AND SECONDARY UTILIZATION. This undoubtedly requires substantial material expenditures but as experience shows the expenditures are quickly reimbursed.

With the appearance of new types of production facilities, particleboard and fiberboard plants, and shops to produce conifer-vitamin meal and industrial chips, the utilization of waste products, in particular from logging production (slash, brushwood), and low-grade wood from forest maintenance cutting, has been substantially improved. In 1982, 233,900 cubic meters of them were utilized as against 41,400 cubic meters in 1960.

Every year 1,200 tons of conifer-vitamin meal for livestock feed, 16 tons of conifer extract, and 10 tons of conifer sap are made from coniferous tree branches.

More than 300,000 cubic meters of waste products are obtained from the wood-processing, veneer, and furniture sectors every year. We use 254,000 cubic meters of them, or 81 percent, for the production of industrial output and consumer goods.

THE FOLLOWING PRINCIPLED PLAN FOR USING WASTE PRODUCTS HAS BEEN ADOPTED: LARGE WASTE IS RECYCLED FOR CONSUMER GOODS OUTPUT WHILE ALL THE REST IS USED FOR INDUSTRIAL CHIPS WHICH ARE SENT TO MANUFACTURE PARTICLEBOARD, FIBERBOARD, AND CELLULOSE. In 1982 alone 59,300 cubic meters of particleboard and 4.9 million square meters of fiberboard were produced from industrial chips.

More than 8 million rubles worth of industrial output and consumer goods is produced from waste products every year. The assortment of this output is continually expanding. It included 55 types of output last year alone. These include handles for various tools, clothes pins, ice cream sticks, meat pounders, spoons, rocking chairs, boards for dough and meat, cutting boards, and others. Every year we produce more than 300 types of souvenirs worth a total of 1.4 million rubles from wood waste products. Shops and sections which produce output from waste products are equipped with nonstandard equipment manufactured through their own efforts. It may not be perfect, but our industry does not produce similar equipment. The annual profit from the sale of output from waste products is 610,000 rubles.

IMPROVING THE UTILIZATION OF WASTE PRODUCTS FOR TECHNOLOGICAL PURPOSES AND CONSUMER GOODS PRODUCTION AIDS IN THEIR CONCENTRATION. For example, the Nadvornaya Forestry Combine has organized production of finished squared parts and delivery of them through furniture enterprise cooperation. The 5,000 cubic meters of waste products obtained in manufacturing finished parts is used in the production of particleboard. This decision is effective for the additional reason that when manufacturing finished parts, it is difficult to utilize waste products directly at the furniture enterprises. Work is now being carried out to build shops for finished parts for furniture at other base enterprises.

While steadily increasing the level of utilization of waste products, we also devote a great deal of attention to increasing the useful yield of basic output and reducing waste during its production. [Printed in boldface]

In saw milling, this is achieved by reducing processing allowances and using a mill saw with flattened teeth and hard alloy soldering. This increases the productivity for saw frames up to 20 percent. And the capacity of the drive remains unchanged. The quality of the saw cut surface is also being improved.

THE CHANGE IN THE STRUCTURE OF CUTTING SITE RESOURCES AND THE POLICY OF MAXIMALLY UTILIZING THE FOREST BIOMASS HAVE CAUSED CHANGES IN THE EQUIPMENT AND THE TECHNOLOGY OF LOGGING. In forest maintenance cuttings (whose proportion in the total volume of cut wood exceeds 50 percent), technology has been introduced to work cutting sites by cutting technological corridors; this

has made it possible to mechanize transport operations within the cutting site. Cable equipment based on ML-2000M motorized winches, wheeled tractors, LL-26B cable equipment, and TB-1 choker-less tractors have been introduced to take the small-scale commodity wood and the cutting waste down from the mountain. Every year 160-170 kilometers of logging roads are built as compared to 49-50 kilometers in the 1960's.

THE TECHNOLOGY TO PATTERN-CUT SAWN TIMBER INTO SEMI-FINISHED ARTICLES ALSO HELPS SAVE ON EXPENDITURES OF WOOD. They are cut out on flow lines by the step-by-step method where first the main large parts are removed from the board and then progressively smaller ones.

REDUCING THE THICKNESS OF SHEET WOOD MATERIALS HAS A SUBSTANTIAL ECONOMIC EFFECT. For example, producing particleboard 16 and 12 millimeters thick instead of 19 has made it possible to save 55,000 cubic meters of wood raw materials a year. Producing planed veneer 0.6-0.8 millimeters thick instead of 0.8-1.0 millimeters makes it possible to increase its useful yield by an average of 20 percent. The yield of planed veneer has been increased by 1-2 percent by introducing pneumatic suction cups. The introduction of these measures alone will enable 4,000 cubic meters of high quality veneer to be saved, converted to the annual program.

Waste has been reduced by 5-7 percent when cutting out sheet materials by using efficient pattern cutting charts and improving the quality of materials. This will allow more than 3,000 cubic meters of particleboard and almost 100,000 square meters of fiberboard to be saved per year. From these materials 6 million rubles worth of furniture can be manufactured.

To a great extent the lack of the necessary equipment, machine tools, and flow lines is holding us back. Of course, we make much of it ourselves but this is a forced solution to the problem. We must often readjust the lines which arrive at the enterprises. Their quality almost always does not suit us and we must replace a number of assemblies.

What shortage of equipment do we experience most sharply? Above all there are no saw mill machine tools for lumber 1 meter in diameter or more. It is true there is the LB-150 lines, but they are not equipped with saws. Therefore we use thick wood for other than the designated purposes. In furniture production there is not enough efficient equipment to apply polyester lacquer and that which exists is unreliable. There is no device to polish polyester surfaces. An important question is the reliability of the tool. Because of this, both the quality of output and fulfillment of the plan suffer.

A SUBSTANTIAL SAVINGS IN EXTREMELY SCARCE WOOD PULP IS ACHIEVED THROUGH REPLACING IT WITH SHEET WOOD MATERIALS WHEN MANUFACTURING FURNITURE. Parts manufactured from sheet materials not only are not inferior to parts from wood pulp, but according to many indicators the former exceed the latter. Thus, the horizontal boards of beds and couches are manufactured with three layers -- one of particleboard and two of fiberboard. The stack put together in

this way is glued together in a press. Afterward the finish layer is glued on and secondary machine processing and finishing is done. Replacing bulk furniture parts makes possible a savings of 3,000 cubic meters of rough-cut furniture parts or almost 10,000 cubic meters of lumber annually.

Introducing a sectorial system of standardization of furniture parts, improving article design, and using new materials and wood substitutes helps reduce wood expenditure per unit of furniture. [Printed in boldface]

But the work being done in the association to improve the utilization of all the forest biomass that is logged and the orientation of basic efforts toward intensifying the recycling of raw materials and using waste products more fully rather than increasing the extraction of raw materials brings about a number of problems for the collective. The basic ones are as follows.

**INCREASING THE PRODUCTION OF FINISHED SQUARED AND PANELBOARD PARTS FOR FURNITURE.** Today, more than 30,000 cubic meters of squared parts for furniture are produced in unprocessed form. Waste products obtained from their processing (up to 50 percent of the volume of rough-cut parts) are hardly used at the consumption points. In addition, transport means are used inefficiently and expenditures to remove waste products are substantial. A similar situation exists for the delivery of laminated wood materials and planed and stripped veneer. Using these materials would make it possible to concentrate and recycle more than 45,000 cubic meters of wood waste products and would liberate a significant quantity of transport engaged in hauling.

**REDUCING THE EXPENDITURE OF WOOD MATERIALS TO PACK OUTPUT, ESPECIALLY FURNITURE.** Today practically as much lumber is used to pack furniture as to manufacture it. Despite the work being done to reduce the expenditure of raw materials for packing output (utilizing reusable containers, including soft containers, shipping output in specially equipped motor transport, increasing production and delivery of furniture in dismantled form, and others), we use almost 20,000 cubic meters per year. Using corrugated cartons and polymer materials would have a significant effect.

**INCREASING THE QUALITY OF THE CUTTING TOOL AND IMPROVING ITS DESIGN.** Allowances for processing parts and the width of saw cuts when doing it can be substantially decreased; this will lead to an increased yield of basic output and reduced waste.

**EXPANDING THE NETWORK OF LOGGING ROADS.** At the present time, the density of the road network is 0.56 kilometers per 100 hectares of forest area. By increasing it to 1 kilometer, more than 100,000 additional cubic meters of small-scale commodity wood from forest maintenance cuttings could be brought into production.

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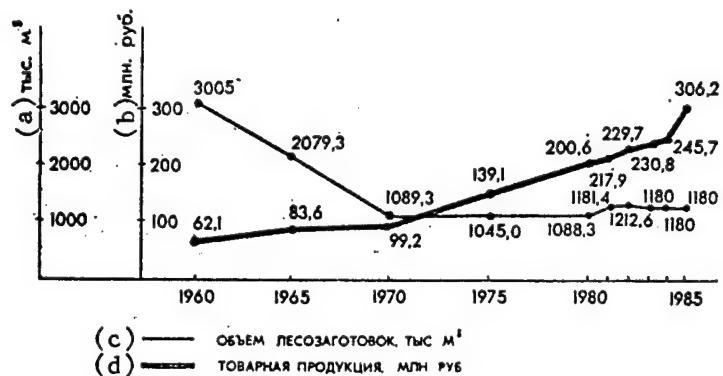
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## INCREASED OUTPUT, WASTE PRODUCT USE IN FORESTRY COMPLEX

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 30-31

[Statistical illustrations]

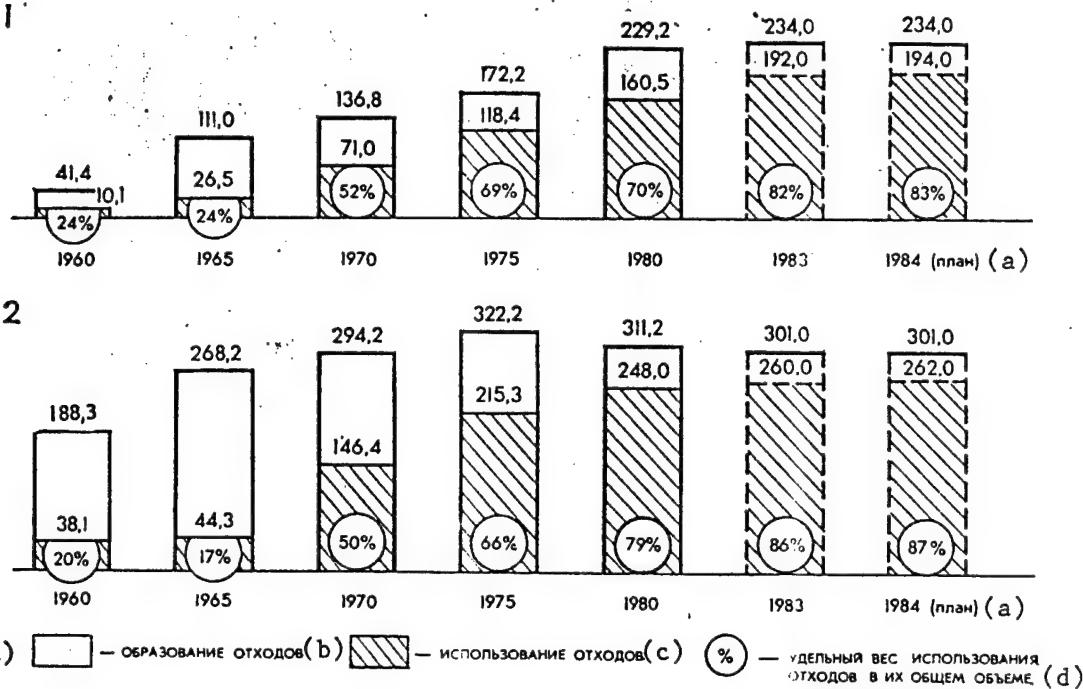
[Text] Increased Production of Commodity Output and Reduced Logging Volume



### Key

- (a) thousands of cubic meters;
- (b) millions of rubles;
- (c) Volume of Logging, thousands of cubic meters;
- (d) Commodity Output, millions of rubles.

Formation and Utilization of Waste Products in the Production of Industrial Output and Consumer Goods from Forestry and Logging (1) and from Saw Milling-Wood Processing Production



Key

- (a) 1984 (plan);
- (b) Formation of Waste Products;
- (c) Utilization of Waste Products;
- (d) Proportion of Waste Product Utilization in Their Total Volume.

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## COMPREHENSIVE WOOD PROCESSING AT VYGODA FORESTRY COMBINE REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 32-37

[Article by I. F. Kalutskiy, director of the Vygoda Forestry Combine: "He Who Cuts Also Cultivates"]

[Text] Our forestry combine was organized in December 1959. Forestry enterprises of the settlement of Vygoda (the logging enterprise, the forestry enterprise, the saw mill, and other small logging and saw milling enterprises) became members in it. About 5,000 people work in the enterprise. Immediately after the forestry combine was organized it became clear that the unification of enterprises of different specializations would not make it possible to solve the problems which faced the comprehensive forestry enterprise. It was necessary to fundamentally change the nature and distribution of labor which had taken shape in the timber industry long ago.

### Forest Cultivation

The entire organization of production in the forestry combine is focused on increasing the efficiency of the utilization of forest raw materials. The first step in doing this is forest cultivation.

Today 414 people are employed in forestry at our combine, and 700-900 people when forests are being planted and maintained. In 1982, 822,000 rubles were spent on forestry. A large part of this -- 505,000 rubles -- was the forestry combine's own capital. Profits totaled 437,000 rubles and receipts from the sale of forestry operation products (seeds, seedlings, forestry output) totaled 68,000 rubles; the latter increases every year.

After we studied the condition of forestry, we reviewed the size of the forest district. When the forestry combine was organized, each forest district had an area of about 10,000 hectares. It was even difficult to carry out conservation functions in the mountains in these areas. In order to make it possible to study the specific features of each section of forest more attentively and effectively restore it, the forest districts were subdivided. After being subdivided the area of a forest district was about 5,000 hectares.

In conducting forest planning work, we compose a technological map for 10 years. The cuts which must be made and the times for them are established on this map. Based on this, we plan the work of the forest districts for each year. A logging ticket is written up for each section; it shows how much wood is to be taken there and from which types of cuttings.

We obtain a yield from invested capital even from forest maintenance cuttings. The goal of these cuttings is to create favorable conditions for the growth of trees from which the future forest is formed. More than 31,000 cubic meters of brushwood was cut during maintenance cutting in 1982. Of this only one-third -- 10,000 cubic meters -- remained in the forest, while the rest was put to use. Part of it went to make consumer goods directly in the forest (82,000 rubles worth was produced). These goods were brooms, bathhouse switches, firewood, and New Year's trees. The rest was hauled to lower yards for further processing. A second benefit is obtained: the plantings grow faster and in a programmed formation, and furthermore we obtain additional forest raw materials for developing other production facilities.

The technological map envisions the species composition remaining after cuttings and what the cubic mass is. We also know how much wood we will take for wood processing and we prepare a production program for this in advance. We even know what the diameter of the timber delivered to the lower yard will be, and therefore we calculate the technology for this diameter in advance.

Such a precise picture allows us to monitor the situation in the forest literally on a daily basis. Forest district workers know absolutely precisely what they will be doing for the month, where maintenance cuttings will occur, how much wood must be cut, and what area of the forests to bring into accordance with the technological map.

Today the forestry combine plants trees in current cutting sites which do not exceed the calculated cut. There is a plan for maintenance cutting until 1988. We can say how much wood pulp we will take in each section from maintenance cuts even when we are planting trees. Correct forestry maintenance cutting not only allows the process of selecting future tree plantings to be regulated but also helps stabilize the forest and increase the total productivity of forest plantings.

#### Principal Forest Use

The second step in the unified comprehensive process is the principal forest use, the cutting of mature trees; this is done strictly according to the calculated cut (now 104,000 cubic meters a year). Everything is hauled away from the cutting site with these cuttings: the tree trunk, branches, and the needles. Trimmed branches remain in the forest only on steep slopes and on rocky ground in order to prevent erosion and enrich the soil. And incentive to cut "commercial" low-grade wood and conifer greens is absolutely the same. All this is raw material for our production, therefore a logging plan is given to each brigade which envisions round timber, conifer branches, industrial firewood, and industrial raw materials (debris from large limbs, large branches, tree crowns). All these indicators are of equal value in fulfilling

the plan. We do not give preference to commercial wood; underfulfillment of any point is underfulfillment of the plan. As a result the collective does not receive bonuses. Wages also depend to an equal degree on the fulfillment of all four indicators.

And one more fact: for us forestry, forest exploitation, and wood processing have the same rights and are subordinate to the forestry combine's director.

The question arises: is it advantageous from the economic standpoint to transport timber waste products? The many years of experience of forestry combine work have demonstrated that it is. The prime cost of transporting wood in the mountain conditions of the Carpathians is high. The average distance of transporting wood is 36 kilometers, which includes 1.8 kilometers of bringing it down from the mountains on logging skids. Transporting 1 cubic meter of timber costs 26 rubles, 59 kopecks, while transporting 1 cubic meter of timber waste products costs from 27-44 rubles. But the proportion of steady expenditures to maintain narrow gauge railroads, shops, and the management apparatus in the prime cost of transporting timber waste products is high (7.14 rubles per cubic meter). If we did not remove the waste, the prime cost of transporting a cubic meter of liquid wood would be 58 kopecks higher. The yield of output from one hectare of total area would also increase.

The forestry combine's collective does a lot to mechanize work in gathering and transporting timber waste products and to reduce its prime cost. The labor intensive phase in mountain logging areas -- bringing the timber down from the mountains -- accounts for almost 30 percent of all labor expenditures for logging. To a significant extent mechanizing these jobs makes the heavy labor of workers easier and increases labor productivity by 25-30 percent as compared to manual labor. Whereas before the forestry combine was organized, wood was brought down from the mountain using wooden skid roads (called "rizy"), today there is a 69.4 percent level of mechanization. The ML-2000M unit with variable tension cable brings the waste down from the mountains, and choker containers are used to transport and load the waste products. Last year an additional unit on a skid tractor was developed and built to mechanize the gathering of waste products at the logging site and transport them to the upper yard along with a bundle of long logs.

Part of the logging waste recycled in the forest into small-dimension wood raw materials is transported directly to the fiberboard plant, bypassing the lower yard. This decreases additional transporting and reduces the prime cost of raw materials. In 1982, 14,900 cubic meters of these raw materials were hauled to the plant.

The rest of the logging waste (3,300 cubic meters) in the form of conifer brushwood and branches goes to the shop for comprehensive recycling of logging waste. There needles are separated out, poles and branches are processed into industrial chips, and conifer-vitamin meal, essential oil, and medicinal extract are made from the needles. The entire process is automated in the shop. Only the raw materials are fed by hand into the needle separator. The shop produced 151,000 rubles worth of output in 1982. That included 471 tons of conifer-vitamin meal, 16 tons of medicinal extract, 600 cubic meters of industrial chips, and 122 kilograms of essential oil.

Despite the fact that according to industrial evaluation, bark is not included in the volume of commercial wood derived from cutting, we try to use this type of wood raw material also. A shop to process spruce bark into raw material for tannic extract was built in 1977. The residue from the bark is used in the shop as fuel for drying. The mechanized cutting of the bark is economical. In 1982, 722 tons of raw material for tannic extract was produced. The prime cost of 1 ton was 71.88 rubles and the wholesale price -- 81 rubles. Each ton yields 9 rubles, 12 kopecks profit. Furthermore, saw logs without bark sell for 2.8 rubles more than rough wood.

In 1982 the forestry combine produced 25.6 million rubles worth of output and of that 3.6 million rubles worth was from its own production waste products. Output worth 99 rubles was produced from each cubic meter of recycled wood. And if it is taken into consideration that 1,000 cubic meters of fiberboard replaces 20 cubic meters of commercial wood, then the forestry combine saves 27,000 cubic meters of wood every year by transporting logging waste to produce fiberboard. This is equal to 60 hectares of mature forest.

#### Organizational Reserves

The organization of the forestry combine enabled fixed capital to be used more efficiently. The same machines, mechanisms, buildings, and structures are used both in logging and forestry production, and transport for operations which at first glance are not technologically interrelated has been combined. Logging workers take part in creating wood crops and other forestry jobs.

During forest maintenance cuttings, the production-economic ties between them are even deeper. In this case the tasks of forestry and logging are interwoven and to a great extent coincide, despite the fact that certain contradictions exist between them. But if the logger himself plants a forest, he will not destroy it unthinkingly.

It must be said that representatives of numerous delegations who have visited us often ask: but how do you insure that the workers use the forest carefully? These questions sound somewhat strange to us. The economic mechanism which operates in the association is aimed at this. It can be said that we have indoctrinated a new generation of workers who do not even think of managing things differently.

The level of mechanization of forest exploitation has increased significantly (see table next page).

Jobs in the lower yards have been fully mechanized. Wood is transported in long logs on a narrow gauge railroad which runs for 170 kilometers in the forestry combine, as well as by logging trucks.

The volume of logging in the forestry combine was reduced to ten thirty-thirds of its 1960 level while the volume of production of commodity output increased from 17.6 million rubles in 1960 to 25.6 million rubles in 1982.

Table. Level of Mechanization of Logging Work at the Vygoda Forestry Combine, in percent

Type of Work	1960	1982
Felling and Crosscutting Timber	92.0	100
Cutting Limbs	2.2	50.3
Bringing Wood Down From Mountains	45.3	69.4
Transporting Wood	76	97.2
Loading at Upper Yards	68.4	94.8

The organization of the forestry combine permitted progressive forms of labor organization, for example the "watch" method, to be used more extensively. It has really existed in the Carpathians from time immemorial. Lumberjacks built shelters (kolyby) in the mountains where they took shelter at night. Today each forestry post has a good-quality dormitory with radios, televisions, and baths. We take workers into the mountains to stay for a week. We take them on Monday and bring them home on Friday (in summer) or Saturday (in winter). This labor organization is especially important for us today when cutting timber has "retreated" into the mountains; otherwise it would take more than two hours to get there every day. Moreover, in working in the open air people need not be "strictly bound" to time. One can work up to 8-9 hours in good weather while in bad weather work must stop earlier. It is precisely for this reason that all workers engaged in logging, including maintenance cutting, as well as the logging post chief and the technician work by the watch method.

The forest districts -- the forest ranger himself, his assistant, technicians, and forest guards -- work in the same way. Managers only come to the settlement for production conferences; the rest of the time they are in the forest with the workers.

The higher we go into the mountains, the higher the prime cost of planting one hectare of forest and the more difficult it is for plantings to adapt. Therefore, we are converting to planting large seedlings. Today we are studying questions of the adaptability of alders and poplars to poor conditions which are unsuitable for planting valuable species (along rivers and land which is choked up with gravel after rivers flood). We have about 100 hectares of these lands. If it is taken into account that in 20 years an alder will yield the same growth as a spruce in 80-100 years, and a poplar yields 300 cubic meters per 1 hectare in 15 years, then this will be a good raw materials base for the production of fiberboard.

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INTERVIEW WITH R.D. LININSKIY, NADVORNAYA FORESTRY COMBINE DIRECTOR

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 37-44.

[Interview with R. D. Lininskiy, director of the Nadvornaya Forestry Combine, by unnamed EKO correspondent: "The Goal -- No-Waste Production"]

[Text] The Nadvornaya Forestry Combine is an enterprise with a more than 100-year history. It originated as a match factory back when the Carpathians were still part of Austro-Hungary. Years passed, masters changed, and along with them the output produced by the enterprise. The only thing that remained unchanged was the lack of a solicitous attitude toward the region's wealth.

The situation changed only under Soviet power. Today the Nadvornaya Forestry Combine is a multisectorial mechanized and automated comprehensive enterprise, one of the largest of this specialization in the Ukraine. Enterprises from three sectors belong to the combine: forestry, forest exploitation, and wood processing. This includes 11 forest districts which raise trees on 58,300 hectares of territory, 2 logging posts, a vehicle column, a lower yard, a plant which produces particleboard, a saw milling-wood processing shop, a planed container and finished furniture parts shop, a consumer goods shop, a laminated plyboard shop, and auxiliary production facilities -- a machine-repair shop, a steam power and energy plant, a construction-repair shop, a finished output warehouse, and a reinforced concrete article plant.

The coefficient of use of bulk wood is 0.9. How the enterprise achieved this indicator is the subject of a conversation conducted by the journal's correspondent with the director of the enterprise, R. D. Lininskiy.

[Question] It is already the third five-year plan that work on reorganizing the Nadvornaya Forestry Combine has been going on in the Prikarpates Association. I know the dream of Vasiliy Fedorovich Veres -- to create a model enterprise here which operates without production waste, an enterprise of the future. Much has already been accomplished in this direction. Tell us, how did you begin the reorganization of the enterprise?

[Answer] After the forestry combine was formed, for a long time we in Nadvornaya only developed logging, saw milling, and producing rough-cut furniture parts and containers.

It was natural that with this structure of production (in point of fact for the most part we produced semi-finished products, and very cheap ones at that), we accumulated an enormous quantity of waste. How could it be disposed of? There was no place to sell it or to recycle it. Moreover, logging was sharply reduced and we converted to calculated cuts. The number of work positions began to decline and the production volume began to fall. Life itself forced us to look for a way out. And by the end of the 9th Five-Year Plan we had completely changed the structure of the use and recycling of timber. We adopted a course toward chemical-technological recycling, that is, the creation of production facilities which could maximally use the waste from production. The production of particleboard was the most promising at that time (and the situation has not changed since).

[Question] Why?

[Answer] A large quantity of waste can be used when it is produced. In addition to waste from wood processing, we had large areas of inferior wood, waste from maintenance cuttings and from principal and secondary use cutting.

The plant to produce particleboard was built but we did not believe that the problem was closed, since extensive production required large quantities of raw materials. So the decision developed to convert to manufacturing finished furniture parts; a new shop was built "by contraband." That is, production was reorganized to insure that we had the maximum amount of waste products. The conversion to finished parts alone yielded us about another 12 percent of bulk wood. By delivering more expensive finished furniture parts to furniture enterprises we raised the profitability of production and obtained the raw materials we needed.

[Question] But after all waste appears even in producing plyboard. Do you use it?

[Answer] Yes. For this purpose we have almost completely converted to supplying finished furniture parts from laminated board (finished with synthetic materials); we are trying to supply less full-form board; we are pattern cutting it; and waste products are being used as raw materials for the production of plyboard. Moreover, full-form boards are 30 percent more expensive than nonpattern-cut board. Opportunities to use raw materials more fully are always being found; one must only search for them more persistently. When we produce plyboard a relatively large amount of powder is formed. We formerly believed that it was not usable for anything, although we did not stop looking for ways to use it. And nonetheless we found an enterprise in the oblast which needed it. We arranged to gather this powder and are delivering it to our neighbors.

[Question] Roman Dmitriyevich, how do you manage to reduce the prime cost of plyboard?

[Answer] Resins comprise approximately 40 percent of its prime cost. Therefore an order was issued throughout the association to use sulfide additives to carbamide resin. They are cheap and do not reduce the quality of the plyboard. Moreover, changing the structure of the use of raw materials is of great importance. The more waste products used, the lower the prime cost. Although, of course, there is a limit to their use and furthermore, their greater use leads to increased expenditure of expensive binding materials. A 15-percent supplement of waste products is now considered optimal. For us the proportion is greater. We have conducted a number of calculations which have allowed the use of waste products to be increased. This has no effect on the quality of the plyboard. More than 60 percent of the plyboard is now produced with the Mark of Quality. We plan to raise this indicator to 80 percent. One-third of the plyboard is exported.

Although we have already dealt with questions of technology, I would still like to dwell on one other problem.

There is probably no production without waste. But ways to use this waste must be incorporated into technology and taken into account when designing a shop. It must not be restricted by the technological equipment which produces the basic output. Moreover, the basic equipment must yield minimum waste. But equipment which either uses waste products from basic production as raw materials or brings them into a condition suitable for use at some other enterprise must be envisioned in this shop. For example, our saw milling shops have sawdust. As long as the cutting method is not replaced by another, we will have sawdust. And in order to use it, it must be sifted, and bark, branches, and other mechanical impurities must be separated out. These are things which must be envisioned when designing the shop.

We must produce clean, technologically suitable, graded waste products both for our own enterprises and for others. But for the present it is difficult to use them. It is time to change the ideas which have developed. Sawdust, for example, is not waste but an indispensable raw material. And its quality must be envisioned by all-Union state standards and norms.

[Question] Up to this point we have been talking about so-called basic production. But after all an enterprise, especially one as energy-intensive as yours, must have strong support units.

[Answer] Yes, you are correct. Basic production is strong when there are strong auxiliary production facilities. I felt this very deeply since I worked as a chief engineer for a long time and was fully engaged in these services. Therefore, we began the reconstruction of the forestry combine with the reorganization and reequipping of the machine-repair workshops and energy shops. Formerly we had a tool section in each shop. It was difficult to monitor their work and its level did not conform to the new tasks. We combined them and put good, business-minded engineers at their head. As a result, these services not only worked on production but also helped us a great deal when a lot of construction was being done in the forestry combine.

We also worked hard to create a steam-power energy system and other auxiliary services. Therefore today I have every reason to say that we are well supported by our support units.

One must say that we did not forget about the future in creating this system; we adopted decisions which now allow us to expand production without additional capital investments (or with minimal capital investments). Our cooperation with the Ukrainian branch of the State Institute for the Planning of Establishments of the Woodworking Industry has proven to be very effective here. Thus, in recent years we have increased production by 50 percent and we still have reserves.

[Question] Roman Dmitriyevich, everything we spoke of earlier is already "working" in your Nadvornaya Forestry Combine. But after all, as you said, there is always room for improvement, one must only look for it. What else do you plan to do to utilize bulk wood more fully?

[Answer] We have new ideas, not global but quite interesting ones. For example, edgings are left when plyboard is pattern cut. It is impossible to use them in producing plyboard: they contain resin. Therefore, we make plyboard for building temporary buildings and structures out of them. But here too small pieces remain which still have not been used. Now together with the Ivano-Frankovsk Planning and Design Technological Institute we have found a solution. We will "evaporate out" the resin from these pieces in special autoclaves and then put them in plyboard production.

We believe that all the plyboard must be pattern cut and only finished parts be delivered to furniture enterprises. I think that will soon be resolved.

Waste from the production of laminated particleboard and wood processing can also be used more extensively in producing consumer goods. Our workers now go to trade bases of organizations that sell sporting, cultural, and household goods and study opportunities to expand deliveries of consumer goods.

We are beginning to build a biofeed shop with a capacity of 9,000 tons of output per year. We will not only recycle conifer branches, but also twigs which cannot be used either for needles or for wood. The list of output is not restricted to biofeeds; the shop will also produce essential oils and other output.

[Question] And do you take everything possible out of the forest? What restricts the transporting of waste products and low-grade wood?

[Answer] We have realistically accessible wood and realistically inaccessible wood (based, of course, on local conditions). There is still quite a lot of inaccessible wood. Two well-known factors contribute to this: the lack of a sufficient number of roads and the lack of special mechanisms. This is our common illness. We are now studying the question of using balloons to reach inaccessible wood. This experience exists. Balloons are used in the mountains of the North Caucuses. Of course, the benefit of their use is relative since the prime cost per hour is high. But here in the Carpathians we grow a unique and value species of wood -- Carpathian beech. It is very

expensive. Beech was formerly used in airplane construction and is now used in producing musical instruments and planed veneer. But it cracks from striking the ground. Using balloons will save millions of cubic meters of this valuable wood throughout the country. And it would be advantageous for us to use balloons to transport beech.

One must say that transporting waste products and undersized wood sprang up after we introduced the method of accepting raw materials by weight rather than volume. Therefore, the loggers try to throw every chip into the truck. If our economists understood the effectiveness of this change, the gains on a national scale could be very great.

Our gain includes the fact that we have eliminated 22 clerks. Now weigh masters are not part of the collective of the lower yard, but are directly subordinate to the production department. This eliminates abuses. As I. I. Skiba, first secretary of the Ivano-Frankovsk obkom of the Ukrainian Communist Party, wrote in PRAVDA, the weighing method has given weight to the forest.

One must say that the timber acceptance schedule we worked out together with scientists makes it possible to avoid mistakes in weighing.

[Question] A decision was made in the association to build a large furniture factory within the Nadvornaya Forestry Combine. What was behind this?

[Answer] Today there are representatives of eight furniture enterprises from different cities in the Ukraine sitting in my reception room. We supply furniture parts to all of them. But is it necessary to expand, in Donetsk for example, furniture production if there are not enough workers in the mines? Furniture is made there from our finished furniture parts which is then sent to other oblasts. Is this wise? Most likely not. We think that miners should extract coal and in Zaporozhye make steel, while our fate is to work in logging and wood processing. Therefore, we want to build a furniture factory. Of course, we will supply the Ivano-Frankovsk Furniture Factory and the Prikarpatskiy Furniture Combine. But we will be able to use most of the articles ourselves. And we will no longer supply parts but ready-made furniture, disassembled. Add accessories, mirrors, glass, and upholstery -- and the furniture is ready, since 70 percent of furniture is parts from laminated plyboard.

The decision has been adopted to build a factory which will produce 30 million rubles worth of output per year.

There is yet another real matter -- building a synthetic veneer shop. A surface layer -- veneer -- is needed to produce laminated plyboard. Today there is a shortage of natural veneer, since supplies of valuable natural wood are low because of the limit on it for veneer production. But after all it is not mandatory to use natural veneer for all types of furniture. There are office furniture, built-in shelves, and entryway sets where this is not mandatory. Therefore, we also want to produce a synthetic veneer to substitute for veneer from natural species of wood.

[Question] In this way the enterprise is growing, expanding, and building new shops and production facilities, and the production of output is increasing. What social problems are you able to solve in connection with this?

[Answer] Do you see that when we build new capacities we create the conditions for specialized employment of people, especially school graduates.

As a rule, a strong, growing enterprise builds a great deal. People see this and are happy to go to this enterprise. That is why there is a waiting list of people who want to work at our enterprise today. Today 36 people want to work at the Nadvornaya Forestry Combine, including 3 engineers. This problem undoubtedly must also be solved.

When we began construction our personnel turnover was 15-17 percent. Today it is 3.5 percent; there is practically none. When we began to reorganize the Nadvornaya, we warned people that it would be difficult at first. But those who survived those difficulties are the backbone of our collective. There are people who have become used to "jumping" from one position to another. When we fired them, we warned them we would not take them back. In general we do not take back those who have been fired from the enterprise. This also plays its role.

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## METHODS TO IMPROVE FURNITURE OUTPUT, LABOR QUALITY DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 45-48

[Article by B. I. Shul'ga, director of the Ivano-Frankovsk Furniture Factory imeni B. Khmel'nitskiy, and R. G. Kirod, chief engineer: "Quality Is Contemporary Technology Plus Skilled Personnel." Passages rendered in all capitals printed in boldface.]

[Text] Our factory is one of the furniture enterprises of the Prikarpates Association. Two branches in addition to the head enterprise belong to the association -- the Pechenezhin Furniture Combine and the Otynya Furniture Factory. The annual furniture production volume is 28.4 million rubles. The head enterprise specializes in producing living room sets (11,800 sets per year). The branches produce dresser drawers, one-column and two-column tables, and stands for televisions.

One must say that in recent years it has become increasingly difficult to produce furniture that is in demand; the purchaser is becoming more demanding. Therefore, the leading furniture enterprises are reorganizing their work. Many, for example, are converting to producing expensive, highly artistic furniture. But we want to attract the purchaser by the comparatively low price of our output and its high quality.

We have had some success. The quality of furniture is steadily increasing. The state Mark of Quality was awarded to only 17.7 percent of our output in 1975; in 1980 it was 58.3 percent, and in 1983 -- 85.4 percent. TODAY, ALL THE OUTPUT THE FACTORY PRODUCES IS IN THE TOP AND FIRST QUALITY CATEGORIES.

What are the basic directions of our work?

ABOVE ALL, THERE IS TECHNICAL REEQUIPPING OF THE FACTORY AND INTRODUCTION OF NEW EQUIPMENT AND PROGRESSIVE TECHNOLOGY. In the 11th Five-Year Plan we adopted a course to fulfill a program on technical improvement of production and replacement of obsolete, static equipment with mechanized and automated production lines and to introduce scientific developments.

In past years of the five-year plan, the factory and branches have installed 210 units of equipment and introduced 41 measures on new equipment and

progressive technology and 6 scientific-technical developments of institutes. Production lines for cross polishing parts (a Polish production facility) and drilling-fitting machine tools from the GDR have been put into operation in the secondary processing department of the machine finishing shop. A complete set of Polish equipment to process furniture panels and a finishing line and Bulgarian production lines for bilevel polishing are being incorporated.

The factory is doing a substantial amount of work to introduce measures of the comprehensive scientific-technical development program of the Prikarpates Association furniture industry into production. And we are relying on cooperation with scientists of the Ukraine in this work. So, together with scientific employees of the Ivano-Frankovsk Planning and Design Technological Institute, we introduced a system of automatic regulation of wood drying in six drying chambers, which significantly increased the quality of drying and reduced losses of raw materials, as well as a system of automatic temperature regulation of the finishing regime for two gluing presses. The finishing regime is now close to the optimal and the quality of parts, and consequently of furniture too, has risen. The PKFS-1 veneer edging machine to finish the edges of panel parts has been introduced.

The quality of output begins with the work positions and with PRECISE OBSERVANCE OF TECHNOLOGICAL DEMANDS BY EACH WORKER. Therefore, technological regimes and instructions have been developed for all work positions, and production sections have standards for parts, drawings, and the necessary scientific-technical documentation. Individual parts of panel articles on which the same operations have been performed as those which the particular worker performs have been placed at the particular work positions in the assembly department.

The worker can verify the correctness and accuracy of each operation by measuring parameters with control-measurement tools, comparing them with the standard model.

THE INTRODUCTION OF COMPLEX NEW MACHINES AND MECHANISMS AND NEW MATERIALS INTO PRODUCTION AS WELL AS HIGH DEMANDS FOR OUTPUT QUALITY REQUIRE SKILLED OPERATORS WHO HAVE MASTERED HIGHLY SOPHISTICATED LABOR. Today 2,120 people work at the factory, and of them 803 are under 30 years of age. The ability of young people to work on different types of equipment and to introduce elements of scientific labor organization into their work position to a great extent depends on their general educational level. Therefore, the factory has developed a five-year worker instruction plan.

When a a young person is accepted for work a production instructor is assigned to him; an agreement to conduct practical instruction is concluded with the instructor. Moreover, a teacher is appointed from among the engineering and technical personnel in order to familiarize the young person with theory according to the installed program. After finishing instruction, the worker does a check project and passes an exam to be given a rank.

WE DEVOTE A GREAT DEAL OF ATTENTION TO WORKERS STUDYING SECOND AND RELATED OCCUPATIONS. In the last year, 68 workers learned second occupations. Six groups totaling 132 workers took special advanced qualification courses.

For the planned and efficient incorporation of progressive know-how and advanced methods and techniques of labor and production organization, the plant has set up a school of progressive methods for the efficient use of local forest raw material resources; 94 people have taken instruction there and 43 brigade leaders have raised their qualifications without leaving production.

A FINELY TUNED SYSTEM TO RECORD THE QUALITY OF EACH WORKER'S LABOR HAS CONSIDERABLE INFLUENCE ON IMPROVING OUTPUT QUALITY. In evaluating work, we rely on two groups of indicators which most fully reflect the attitude of each worker to his labor obligations. These indicators are labor quality and labor productivity.

In evaluating the quality of workers' labor the following are taken into account: percentage of output accepted on first submission; cases of procedural violations; whether there are defect certificates; cleanliness and sophistication of the work position; and maintenance of labor discipline.

The evaluation of the labor quality of engineering-technical personnel is put together from the following indicators: whether there are complaints; total fines; and prompt delivery and quality of reports.

The entire system of moral and material incentives is put under these indicators for evaluating quality of labor. It has proven to be efficient and significant.

The output quality control division plays an important role in the struggle to improve output quality.

As already stated, the bonus payments for all factory workers depend on the coefficient of labor quality. But indicators of the quality of labor of workers in the output quality control division take into account, on the one hand, the excessive consumption of raw and processed materials and, on the other, overfulfillment of production norms by workers. Therefore, the division has an interest in high quality work by line workers.

But it can happen that all the collective's efforts to produce high quality furniture come to nothing. Before the furniture gets to the purchaser it has been scratched or broken somewhere. This occurs because of poor packing. This question is difficult, especially when there is a shortage of certain necessary materials. Increased production of furniture causes increased needs for railroad cars and motor vehicle transport necessary for hauling. In order to use transport means and packing materials efficiently, the factory organized production and delivery of chairs and children's beds in disassembled form. This enabled 300 railroad cars to be saved during the years of the 11th Five-Year Plan alone. Since 1978 we have been packing lattice-work furniture in soft reusable containers; this makes it possible to save 400 cubic meters of sawn lumber every year. The factory's engineering-technical employees have developed soft reusable containers for packing frame articles of Oksamit furniture sets, children's cots, glass, and mirrors.

Introducing soft reusable containers allows 800 cubic meters of sawn lumber to be saved per year, 24 tons of packing paper, 4 tons of waxed paper, 10 tons of nails, 8 tons of corrugated cardboard, and 3 tons of metallic strips, and also substantially increases labor productivity. As our experience demonstrates, using soft packing containers substantially improves the safety of furniture during transportation.

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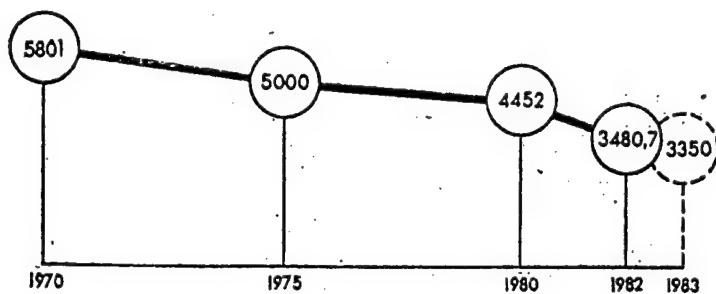
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REDUCED MATERIALS EXPENDITURE FOR FURNITURE ILLUSTRATED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in  
Russian No 9, Sep 84, p 48

[Statistical illustration]

[Text] Reduction of Expenditure of Materials (Converted to Round Timber)  
per Unit (1 Million Rubles) of Furniture, in cubic meters



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## PROBLEMS OF SECONDARY USE OF FOREST WEALTH REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 49-53

[Article by G. T. Shchetsyak, head of the association's department of secondary use and hunting: "The Gifts of Our Forest Cropland"]

[Text] Secondary use of forest wealth is an independent sector of the economy in our association. But what does it include? Procurement and processing of the nonwood output of the forest -- berries, mushrooms, and medicinal plants, as well as hunting, the fishing industry, and animal husbandry. And these types of activity have been put on an industrial basis in the association and included in the forestry combine's plans.

### Output of Plant Origin

Forestry combine workers, school children, and pensioners are recruited to gather berries, mushrooms, and other output. And at this time "independent hunters" after the gifts of the forest are not allowed in the forests which belong to the association.

The primary processing of mushrooms is organized directly in the forestry districts where special receiving points are set up. Mushroom cookers are set up there. The intermediate product produced in them is then sent in barrels to canning industry enterprises. A shop to process secondary forest output operates in Delyatin. It now has a capacity of 600,000 standard cans a year. We plan to raise it to 2 million standard cans. In winter or poor crop years we use this shop to process vegetables brought from the southern Ukraine. In the future we are going to process all wild output ourselves. One of the main directions of our work is to create fruit and berry plantations in the forestry districts from wild wood-shrub species. About 270 hectares of plantations of dark-berry and common rowan, dogwood, buckthorn, briar, black haw, wild myrobalan, and so forth were created during the years of the 9th and 10th five-year plans. More than 70 hectares are already bearing fruit. Every year assistance is given to the natural renewal of berry patches on an area of more than 50 hectares. The plantations receive constant care, and organic and mineral fertilizers are applied.

In order to replenish the base for procuring wild fruit and improving the feed qualities of forest lands for birds and wild animals, we introduce fruit and berry wood and shrub species into forest crops. The area of industrial fruit-berry plantations with improved species stock is to be raised to 400 hectares in the 11th Five-Year Plan, and to 500 hectares by 1990.

We first gathered birch sap, 178 tons of it, in 1970. Since 1974 we have gathered 1,000 tons of the sap every year. Of that 300 tons are canned by the Delyatin Forestry Combine, and we send the remaining raw material to the canning shops of the oblast department of the food industry. They are glad to take it from us, since as yet there are no other raw materials. Receiving the birch sap allows them to load their production capacities fully and increase the production of highly profitable commodity output.

The quality of the sap depends on its efficient delivery to consumers. In the flatlands gathering the raw sap does not present any particular difficulty since there are access roads to the gathering points. In the mountains this process is more labor-intensive. Therefore, the Solotvin Forestry Combine organized transportation of the raw sap from the mountains to intermediate warehouses in polyethylene pipes.

#### Animal Husbandry

Formerly, the development of our animal husbandry was to a great extent unplanned, without any program. After the May 1982 Plenum of the CPSU Central Committee, the situation changed. During the years of the 11th Five-Year Plan, 4,150 head of cattle are to be raised as well as 64,700 rabbits; the total slaughter weight will be 691 tons, or twice as much as in the 10th Five-Year Plan. Pork production will be raised to 854 tons, and mutton and poultry to 20 tons.

#### Now how have we organized this work?

In the spring young stock is bought from the population. Fattening centers are set up at each forestry combine. The meat is used in dining halls and mess halls and is sold through ORS [department of workers' supply] stores. We delivered 352 tons of meat in live weight to ORS public catering in 1983.

Inasmuch as they do not allocate feed for us in the centralized system, we rely entirely on our own efforts. Forestry districts lay in at least 5,000 tons of rough feed a year for their own needs and to supply to oblast kolkhozes and sovkhozes. To do this, more than 3,000 hectares of natural hay fields, forest clearings, and wood crop areas are used.

But our herd is growing and natural hay fields are being depleted. We must think about improving them. And here the lack of seeds to plant holds us back. Obviously, the oblast agricultural administration should include the forestry complex in requests to obtain seeds.

We also encourage in every way the development of private plots by our workers; we help them with obtaining rough feed and building materials, and allocate hay fields and farming sections. The workers and employees of

forestry combines now have 12,500 head of cattle, 10,500 head of pigs, and about 7,000 sheep and goats. Every year 290 hectares of plowed land, 2,680 hectares of hay fields, and more than 1,000 hectares of pasture are allocated for the service plots of the sector's workers.

#### Hunting

In this sector, as in others, our efforts are aimed at preservation, reproduction, and multiplication of the wealth of the forests of the Carpathian Region and at increasing the profitability of hunting. In 1982 alone, the association carried out biotechnical measures costing a total of 190,000 rubles.

We now have 11 registered enterprises with an area of 145,500 hectares and the Osmoloda State Hunting Enterprise with an area of 84,500 hectares; moreover, on the basis of existing statutes 129,000 hectares of land has been withdrawn from hunting use. The 140,500-hectare Markovtsy Reproductive Fallow Deer Farm and a 28-hectare wild sheep farm have been organized. The Dibrova Pheasant Farm (area -- 47 hectares) is under construction. There is a plan to organize the Khotymyr State Hunting Enterprise (1,400 hectares).

Work is continuing to increase the numbers of wild animals and birds. We have 200 bears, 15 European bison, 2,000 deer, 60 moose, 3,700 roe deer, 1,560 boars, and many hares, squirrels, wolves, foxes, lynx, martens, badgers, and so forth.

Exploitation of hunting stock is carried out in strict accordance with hunt planning materials prepared by an expeditionary party of the Ukrainian Forestry Planning Enterprise. In 1982 more than 6,500 rubles worth of game meat was delivered to the oblast trade network.

Unfortunately, not everyone supports our initiatives.

The question is painful for us -- the haphazard application and storage of poisonous chemicals and mineral fertilizers at kolkhozes. This leads to the death of deer, boars, and roe deer. Poisonous chemicals and mineral fertilizers washed out by flood waters sometimes get into rivers and cause the death of fish.

And we have said so many times that in our conditions it is essential to plow fields and harvest from the middle outward in expanding circles to the edges. But frequently plowing and mowing is done in the opposite way -- from the edges to the middle. The frightened animals hide and perish in the plowed strips to which they are driven.

#### What Hinders the More Complete Incorporation of Secondary Use Products

Even today we could substantially expand the scope of use of the forest's nonwood output. What is holding us back?

Above all, the lack of special equipment and vehicles. We are forced to get it by every kind of truth and untruth. The equipment is rolling machines of different calibers, autoclaves, pumps, press filters, and food pumps. To cook mushrooms we need cauldrons and mobile mushroom cooking units.

Polyethylene sacks for pickling mushrooms are needed. We salt mushrooms in 100-kilogram vats. There are 18 kilograms of brine in each. But the vats are low quality; the clapboards fall apart and the brine spills out. Polyethylene bags must be put into the vats. But as far as we know industry does not produce these bags.

We are in dire need of prefabricated storage units which would be installed in the mountains during the harvesting of the output.

Many nonproductive losses during the gathering of wild crops occur because of poor transport support. Today birch sap must be taken from the mountains in three-liter cans. By using flexible polyethylene pipes like the Solotvin Forestry Combine does we could deliver the sap from the forest directly to the vats. In all we need about 10,000 meters of this flexible pipe. But we have not as yet been able to obtain it in that quantity.

Beekeeping in conditions of the Carpathians is inconceivable without efficient transportation to nectariferous plants. Tractors and trailers which we could adapt for transporting hives are needed to do this.

These are our problems. We hope that they will be resolved in the near future. Life itself confirms the need to efficiently and comprehensively conduct forestry management taking advantage of all forest capabilities.

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## SCIENTISTS PRAISE PRIKARPATLES ASSOCIATION EXPERIENCE

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 54-55

[Article by V. F. Lositskiy, candidate of technical sciences and deputy director of the planning and design technological institute in Ivano-Frankovsk, and Ye. N. Bykov, candidate of technical sciences, Karelian Scientific Research Institute of the Timber Industry in Petrozavodsk: "Scientists' Opinions"]

[Text] V. F. Lositskiy

With the creation of comprehensive logging associations in the Carpathians, practical workers needed new technological processes, new machine tools and devices, and the like to be developed. And a broad field of activity opened up for scientists and designers.

One must say that of all the associations with which we cooperate (and there are 28 of them in the Ukraine), contacts with Prikarpatles are the easiest and most productive. This is explained by the atmosphere which has developed in the association: they are genuinely interested in introducing the new and the progressive there. And the managers -- the director and his deputies -- are interested in this above all.

We concluded a creative contract with the association on all directions of its work for the 11th Five-Year Plan. Thus, technical documentation to prevent and eliminate erosion and flood processes on the Prut River and its tributaries was developed in 1983. The confirmed economic effect was 130,000 rubles a year.

We find quite interesting the scientific-planning decisions on using suburban forests of the foothills and the mountainous part of the Carpathians for recreation for urban workers, in particular the plans for the Mochary (351 hectares in area) and Klubovtsy (820 hectares in area) suburban parklands. We are now developing landscape improvements for the Carpathian State Nature Park zones. Work is underway to develop road-building machines to build and repair road surfaces of mountain highways which will make it possible to mechanize manual labor in preparing rock and to process it into crushed stone at the places where repair work is being done. Additional construction of forest

highways using the institute's developments have made it possible to bring about 50,000 cubic meters of wood raw materials from forest maintenance cuttings and logging waste into use. The technology of logging in the mountains is being improved. Promising technology for logging work on the basis of T-157 and T-35 wheel tractors, the TB-1 choker-less vehicles and new mechanisms and devices has been developed. It has been introduced in most of the association's forestry combines. The gathering and transport of logging waste from principal use, undersized wood, and maintenance cuttings is accomplished using locking containers and other technological equipment, according to the "uniform packet" system from the logging sites to the point of consumption.

This is only a cursory list of our joint work. I am certain it will continue.

Ye. N. Bykov

The experience of the Carpathian Region deserves to be widely disseminated. Everything the Prikarpates Association is doing to use wood raw materials comprehensively is useful, necessary, and promising. Unfortunately, we are devoting too little attention to this direction in our country at the present time. It is considered secondary, unimportant. There are no strict plan assignments; therefore, logging brigades are not interested in the comprehensive use of forest wealth. In Prikarpates, in contrast, all assignments are delivered to the brigades. Cutting undersized wood and logging waste is just as important to fulfilling the plan as cutting commercial wood. All workers from the top to the bottom try to fulfill these plans. We have not met such labor organization in the timber industry anywhere else in the country.

The merit and service of the association's workers is above all that they have raised "secondary" production to the same level as basic production and plan the former along with the latter. But this experience can be imitated only with a wood chemical production complex for particleboard and fiberboard and furniture, that is, when the production cycle will be completed. Otherwise chips, sawdust, and other raw materials will be lost.

Most interesting and useful to me was the visit to the shop for comprehensive processing of forest greenery and logging waste at the Vygoda Forestry Combine. It was designed by the Ivano-Frankovsk Planning and Design Technological Institute. The main advantage of the shop is the comprehensive use of branches and forest greenery.

I would like to emphasize: it is time for machine building to address the needs of the forestry complex. Prikarpates's present is the future of the country's timber industry.

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## MANAGEMENT POLICIES OF PRIKARPATLES DIRECTOR VERES DISCUSSED

Novosibirsk EKONIMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 56-66

[Article by Ye. Kolosova: "Veres' 'Management School'"]

[Text] In 1979 Vasiliy Fedorovich Veres became general director of the Prikarpatles Association. At that time he considered the main thing to be determining the future of the association's development. The processing of wood had to be intensified. Only in this way could the association's economic situation be strengthened.

But intensifying the processing of wood and creating powerful furniture enterprises, shops, and plants to produce particleboard and fiberboard was held back by the lack of a material base. A large-scale power system had to be created and extensive construction in the sector, which up to that point had done without large capital investments, had to be begun. The need for such a step had to be proven both in Kiev and in Moscow.

It always hurts to lose time proving the obvious. But Veres did not pay attention to the offenses then. If he was not understood at one office, he went to another. And he managed to convince them of the wisdom of his chosen strategy. Particleboard and fiberboard plants became the basis not only for using saw milling waste and low-grade wood, but also for developing the furniture industry, which now yields large profits for the association.

But to prove that you are right is not enough. And even to obtain support in the ministry is not enough. It was obvious that the 40,000 members of the widely dispersed collective could cope with important tasks only if a core of strong managers was formed by all its individual enterprises.

Indoctrinating a whole pleiad of modern-thinking managers is one of the main achievements of the Prikarpatles Association.

## Biographical Information

Vasiliy Fedorovich Veres has spent all his working life in the Carpathians.

After graduating from the Lvov Forestry Technical Institute in 1953, he became the technical supervisor of the lower yard at the Vygoda Logging Enterprise. He was the first engineer in the logging enterprise to be educated under Soviet power and the first Soviet engineer, as he was called at that time. And he was fanatically devoted to the idea of restoring the Carpathians and did not spare himself in doing it.

Veres worked for 10 years in Vygoda and made his way up to be the enterprise's chief engineer. After that he was appointed director of the Kolomyya Forestry Combine and then the Bolekhov Forestry Combine. Vasiliy Fedorovich became the chief engineer of the association in 1968.

### How the Manager Matures

Forestry combines, which combine features of various sectors, occupy a special position in the association's structure. They are both forestry districts and industrial enterprises. Veres treats the selection of their directors with special care. As a rule young, energetic managers are appointed to these positions.

We will talk about some of them.

I. F. Kalutskiy, director of one of the leading forestry combines -- the Vygoda Forestry Combine, awarded the Order of Labor Red Banner: born in 1941 and graduated from the Lvov Forestry Technical Institute in 1968. Since 1969 he has been an engineer for scientific organization of labor and then an engineer at a furniture building facility, a senior production department engineer, head of the planning department, and chief engineer. He has been the director in Vygoda since 1978.

R. D. Lininskiy, director of the order-winning Nadvornaya Forestry Combine: born in 1939 and graduated from the Lvov Forestry Technical Institute. Passed through all production ranks: foreman, senior engineer, shop chief, department head. He has been director of the forestry combine for the past 8 years.

B. F. Mel'nik, director of the Osmoloda Forestry Combine: born in 1943. Lived and studied there, in Broshnev. After high school worked as a fitter. Sent by the enterprise to study at the Forestry Technical Academy in Leningrad. Since 1970 has been the senior mechanical-engineer, chief of the particleboard plant at his native forestry combine, and since 1974, the chief engineer. He has been the director of the Osmoloda for the past year and a half.

V. M. Panevnik, director of the Vorokhta Forestry Combine: born in 1946, native of Vorokhta. Sent by the association to study at the Lvov Forestry Technical Institute. He has worked at the association since 1961, first as a

mechanical engineer and then senior engineer, chief mechanical engineer, and deputy director. He has managed the enterprise for the past 5 years.

R. V. Shpek, director of the most remote mountain Verkhovina Forestry Combine: 29 years old (29!). He graduated from high school and was sent by the Osmoloda Forestry Combine to the Lvov Forestry Technical Institute. Graduated with distinction. He worked at Osmoloda, first as a technical supervisor of the lower yard, then as its chief. In 1978 he began studies in graduate school. But he was simultaneously offered the position of chief engineer of the Verkhovina Forestry Combine. He became its director in 1981.

How is a director cultivated? To this perhaps naive question Veres has a very well-defined answer. "In the first place," he says, "you must surround yourself with intelligent, talented people; otherwise you cannot be successful in the work. We look for worthy people. We scrutinize each person. We try to have the manager begin as a foreman, to "feel," as it were, production with his own hands, and be able to work with people. And then we test the candidate in some serious job. That is the decisive moment.

"For example, when the particleboard plant was being built in Nadvornaya, a complicated situation arose with outfitting the units. We urgently needed transformers, but orders for them for two years ahead had already been received. Such a serious delay did not suit us; we desperately needed the plant. It was precisely at that point that the energy and determination of R. D. Lininskiy, who was working on these matters, showed itself. Along with S. V. Perevyazko, who was a deputy of the USSR Supreme Soviet at that time, he went to Sverdlovsk, got a meeting with V. V. Blyukher, who was the director of Uralelektrotyazhmarsh at that time, and concluded an agreement for the delivery of transformers ahead of schedule. Today Lininskiy is one of our best directors."

According to the deepest conviction of Vasiliy Fedorovich, a person deserving to be in a management position should do so before he is 40 years old, while he is full of strength and energy. Otherwise he "burns out."

"But a young person can be thrown into the production whirlpool and be ruined," continues Veres, "therefore, for a certain time we supervise them, watch them, and monitor them. But after they have gained experience we tell them -- stand up on your own feet and work by yourself."

Here is how the young managers stood up (and are standing) on their own feet:

I. F. Kalutskiy: "I had been working in Nadvornaya since 1976 and was responsible for launching a laminating shop. Soon after its launching, Vasiliy Fedorovich called for me and said: 'You have proven yourself satisfactorily; you can be a manager.' And I received an appointment in Vygoda. The very first and greatest complication for me was that this forestry combine had always been praised for its good directors. Many of our sector's leading workers in the Ukraine came from there. At that point I

weighed my own strengths and understood that in some ways I could arrange things better than had been done before. For half a year I scrutinized the matter and studied. And since February 1978, there has been no time we have not fulfilled the plan.

"I learned much that was useful working as an engineer in the scientific organization of labor. That work was new then, I was interested in it, and I took up certification of work positions seriously. I filled in what I had not learned in the institute. I still remember a conversation with Veres right after my appointment. He gave me some very valuable advice. Some of it was unexpected: do not begin with the plan, begin with labor safety. We must work in the forest so there are no cripples, falls, or disabilities. Even now we begin every work conference with a report from the engineer on safety procedures.

"Management of the collective is not taught in the institute. The council of directors and planning sessions became a real school of management, a school of socialist enterprise for us. Veres conducts them in a talented way (I can find no other word for it). He teaches how to work and opens up the future at these meetings. And he does not simply pose tasks but suggests ways to fulfill them. 'There are no unsolvable questions' -- those are his words.

"The business-like atmosphere which has developed in the association -- no 'sniping' or keeping score -- helped and does help a lot in the work. Mutual high demands are encouraged in every way. And the association's apparatus is equally responsible along with the enterprise directors to the administration for all omissions in the work."

B. F. Mel'nik: "When I was chief engineer at the Broshnev Forestry Combine, I worked on reconstructing the fiberboard shop. We raised its capacity from 25,000 square meters a year to 80,000. Most likely, this reconstruction served as an 'exam' for me for the position of director of the Osmoloda Forestry Combine.

"How did I begin? Above all I tried to orient the collective to solving future problems. In my opinion, every worker should know where we are heading and how production will be developed. Therefore, not one discussion with the collective omitted reflections on the future of the enterprise.

"But I do not know how things would have gone for me in the beginning if it were not for the help of the association's managers. Every day Vasiliy Fedorovich conducts an economic analysis of the work not only of the association as a whole but of each enterprise. He scrutinizes our problems very concretely and thoroughly. For example, we are building a particleboard shop for an estimated cost of 13.3 million rubles. I constantly feel Veres's steady attention to this construction. We have quite a large multisectorial system and we do a lot of construction. And he is always in the know, and pesters us and corrects us."

V. M. Panevnik: "Ours is a planned-loss enterprise; therefore I especially value help on questions of determining prospects. Development of wood processing shops at the Vorokhta Forestry Combine was not planned in the 10th

and 11th five-year plans. The forestry combine is remote, located in the mountains. But the example of Nadvornaya and Vygoda inspired us. We began with construction. We turned over a shop for finished furniture parts; we are reconstructing an old saw mill; and we are building a consumer goods shop, a building with 30 apartments, and a kindergarten. At first we built using loans, but now money has appeared and we are able to develop both the enterprise and the settlement. In 1985 we should cease to be a planned-loss enterprise.

"Well, my own personal difficulties were related to the fact that I myself was born and grew up in Vorokhta. I have many relatives there and some of them expected to receive some indulgences from me. I had to prove the opposite to them. Our settlement is small and if I were to show a weakness for 'my own people,' it would instantly be known in Vorokhta and in the mountains. After that I would hardly have had the work well in hand."

R. V. Shpek: "At 27 it is not easy to be a manager, all the more so as the situation at the enterprise is quite complex and the collective is rather large. We have 3,000 people, and moreover they are dispersed in the mountains.

"Advice from the managers is also needed in order to feel confidence in one's own strengths. It is important that you received advice from them, rather than instructions. To a certain extent this makes up for the lack of worldly experience. Although, of course, we are not raised under hothouse conditions. I am the one who makes the decision.

"Our enterprise is a planned-loss enterprise. Primary wood processing predominates at the present time. Our most important task is to change this situation. To do this we are finishing construction of a saw milling shop and are building a powerful boiler house. We plan to begin construction of a finished furniture parts shop. This is already expensive output and it should yield decent profits. We are already steadily reducing losses today."

That is how Veres's subordinates speak of themselves and of their work.

To the question of how he deals with his students' mistakes, Vasiliy Fedorovich answered: "I look at it realistically. If the person could not have done anything, I do not punish him. It is another matter if he could have, but did not want to. Many mistakes can be avoided if one senses the state of affairs in each section and knows the people's mood. But this does not come easy. One has to live for production."

When in the course of the conversation I posed the question to Vasiliy Fedorovich of which qualities, in his opinion, must be characteristic of a modern manager, he answered in this way: "We have a comprehensive enterprise. Foresters, furniture makers, wood processors, and specialists of other sectors work here. Who can be the director under such a system? I say an intelligent person who is capable of learning his whole life. Not everything is taught in the institute; life is the supreme school. It is important for a manager of any rank to extract what is useful to him from life's lessons each day. It is especially nice to see how the management skill of the students grows. Now I

am already trying to borrow some methods of conducting business from Kalutskiy, for example. I believe that Kalutskiy and Lininskiy are first-rate managers."

Management skill. . . What does this concept mean at Prikarpates?

We will attempt to present some observations.

#### Competence

I. F. Kalutskiy: "A manager must have the necessary information on the condition of the sector. In the first place, this will help plan the future of development and, secondly, a comparison with other collectives can yield much that is interesting and instructive. Moreover, one must know how each brigade and each shop works. For example, we have 266 brigades. I keep a little booklet -- an information record on the results of the work of each of them. This allows me to know what is going on at all times. A worker from the forest comes to see me. Before I invite him into my office I see if there are any discrepancies in his brigade's work. After solving the question he came to me about, I ask, for example, why the brigade did not fulfill the month's plan. Sometimes the worker points out a different reason than the manager does. And this has to be straightened out..."

"And afterwards, of course, the worker tells the brigade that the director knows about the underfulfillment of the plan and asked about its causes.

"Veres himself is an example of great competency. He may not have memorized every indicator for a particular enterprise, but he knows all the parameters. It has happened (very rarely, it is true) that I have disagreed with him about something and had to defend my point of view. Of course, this is difficult. One has to prepare oneself and give assignments to one's services. But if you do prove that you are right, you sense respect on his part."

#### Enterprise

R. D. Lininskiy: "Socialist enterprise is essential for a manager, within the limits of the law, of course. What do I mean by this? Above all it is the ability to find a way to solve a question in the most complex situation. Today, for example, it is difficult to find bricks. The suppliers are letting us down because of a lack of coal. They have no coal and we have no bricks. At that point we took up another path; we found coal for the brick plant (it was easier for us than for them), and in exchange we got the bricks we need.

"When we were building the particleboard plant, I had to travel around the country a lot, settling questions of gathering all the needed supplies. It was then that I understood how important personal contacts among managers are, especially today when material-technical support is a problem area for any enterprise. I do not have the notorious principle -- 'You scratch my back and I scratch yours' -- in mind. I am deeply convinced that if a manager has turned to me for help, it is not because of a good life. I must help him as much as I can. Of course, I do not like to play one way only; there must be mutual benefit."

V. F. Panevnik: "Of course, a discussion of socialist enterprise is not at all simple. Why, for example, must the director of a forestry combine exchange timber for metal? Because he does not want downtime. He is obliged by his position and his duty to the state not to permit it. That is where this exchange comes from. I think that the root of evil here is poor planning, which the press, including EKO, has repeatedly written about."

R. D. Lininskiy: "In contemporary conditions a great deal depends on whether the manager of the enterprise shows initiative. And the 'base' indicators thought up by certain people ruin this initiative. For example, we exceeded the planned capacity of the particleboard shop -- they adopted it as our base. We achieved good quality indicators -- they were adopted as base indicators. But after all, machines have a limit beyond which they cannot operate. I think that the norm should be uniform for all enterprises, and if the work results are different, it means that people work in different ways. But the 'base' indicator slaps the hands of workers with initiative, forces us to create stockpiles, and hide reserves. The 'base' destroys initiative."

I. F. Kalutskiy: "No matter how much planning organs try to take everything into account, unforeseen circumstances arise when a decision must be made for suppliers, marketing agencies, the association, and even the ministry. They are made here, locally. Let us suppose a plant has been shut down. There is no time to wait until the Gossnab territorial organs solve the problem of where to get a motor, a gear-wheel, a bearing . . . It is in such situations that the director's enterprise and his independence are essential. Today we do not have the right to use even one square meter of plyboard produced above the plan. The marketing organs immediately issue an order for it."

"An unusual electric motor broke down. Production was stopped. We found this motor at a neighboring enterprise. And they were interested in exchanging it for plyboard. Since you are accountable to the state for the uninterrupted operation of the enterprise, you agree to the exchange. Everything seems fine -- the machines are running, the railroad cars are rolling, the workers are working. . . But you return from work with mixed feelings: you do not know if you fulfilled your duty or committed an illegal act. Nonetheless, the manager can probably be trusted to dispose of above-plan output from economized materials. And to insure that this is not abused, let the supply organizations write up fund allocations for those enterprises with which the director established forced ties."

"It seems that it is time to legalize the manager's enterprise. It always has and will continue to decide many things in production."

V. F. Veres: "The question of expanding the rights of managers is very aptly posed in the CPSU Central Committee and USSR Council of Ministers decree 'On Additional Measures to Expand the Rights of Production Associations (Enterprises) of Industry in Planning and Economic Activity and on Increasing Their Accountability for Work Results.' It is obvious that their accountability for the results of the enterprise's activity must be increased at the same time. The accountability of planning organs and organs of material-technical support must also be greater. Otherwise, independence can hurt the enterprises themselves."

### The Ability to Rapidly Orient Oneself to the Situation and Deal With People

V. F. Veres: "The ability to deal with workers, with colleagues, and with superiors is a very important quality for a manager. Some people do well at their local job site, but are terrified to visit the office of a higher-ranking manager. This type of timidity hinders the work. One must be assertive. Of course, first one's proposals must be clearly studied and corroborated by economic analysis."

"A manager must be bold in solving questions and be able to take a risk. If not, the enterprise gradually deteriorates."

R. D. Lininskiy: "Yes, a manager often takes risks, but if I take a risk I weigh all the pros and cons. That is, a risk should be taken only when there is no other way to achieve success, when I will be able to convince anyone that it is the correct step and the ratio of possible losses and gains is absolutely clear to me. I always leave time to think over a risky step."

"We were doing important (for our sector) construction during the 9th Five-Year Plan. We incorporated 19.7 million rubles of capital investments. It was very difficult. The work went on day and night. And everything had to be monitored and all construction sections had to be watched. Here is one example: an underground crossing had to be laid under a railway along which trains passed every 20 minutes. The engineering decision was calculated down to the last detail. Everything had to be done in a few days. We, the managers of the enterprise and the engineering-technical personnel, spent those several days in the trench together with the workers."

### Humaneness and High Demands

V. F. Veres: "The state-minded posture of the modern manager is expressed in his concern for the collective and strengthening his enterprise. An economically strong enterprise can offer its employees more benefits. In my opinion, this is where the interests of the enterprise and the state converge."

"Work with people will be fruitful if the manager continually monitors himself. Above all he must not forget his promises. If you deceive once, twice, three times -- you will have no authority either with those below you or those above you. With such a large volume of work it is difficult to remember everything, but you must seek a solution to the situation. I, for example, write down what I must do first in a booklet and then I copy it into a special monitoring book. Once a week I gather the association's managers together and see who did what and what was not done. It is a work obligation of the manager not to forget what was promised to people."

"If someone needs help or someone has had a misfortune, the response must be immediate. In addition to purely human satisfaction from helping someone, one other thing is important here: a good reputation spreads rapidly and the manager's authority increases. In my time I have had to resolve the most intimate problems. But if people come to me with these problems, it means they trust me."

"A bureaucratic approach to people is intolerable. If a person has done something wrong -- let him have a sound tongue-lashing; if he has distinguished himself -- praise him; and if he is in trouble -- help him.

"But at the same time work contacts must be precise. Never permit demands to be reduced. At our work conferences we encourage mutual high demands of departments. It is especially important to demand principled behavior from employees today when personal interests often are unabashedly made paramount. Many people have gotten into a dependent frame of mind and there are many simply impudent people who demand 'give me,' without offering society something in return. One must be relentless in the struggle against these people. If you give in to one, hundreds like them will appear. It is important to act on a principled basis to the end."

V. M. Panevnik: "We had a flood this year. It did quite a great deal of damage. How could you not help people? If you do not know all the misfortunes of the workers, it will be difficult not only to manage but to work with them. And if you are not demanding -- good results will not be achieved. Those are the two prongs of it."

R. V. Shpek: "Our rayon is quite complex and near the border. The local population is comparatively small, and not all who come here remain to live. Mountain conditions are tougher and we do not have the comforts to which people have become accustomed on the flatlands. Therefore, we for the most part depend on local personnel. We take very good care of them. We have many skilled workers and many of them are handling their obligations well. Those are the ones we must make go to school at all costs. Today 40 people from our forestry combine are studying in VUZes and many are studying by extension."

I. F. Kalutskiy: "Regardless of his position a manager must feel himself to be the same as everyone, a person who is fully accountable only for the work in his own section. He can use his authority only for the sake of the work and in no other case. The lack of this conviction ruins many young managers.

"Working with people is delicate and difficult. I get the most satisfaction when people are satisfied with me, though by nature I am not a good-natured person. Let us suppose that it was a very difficult month and the situation with the plan was almost hopeless. However, if I have done everything possible and impossible, we have fulfilled the plan, and now the workers receive a bonus -- I am happy. I learned to deal with people from Veres. To him a person who knows how to work is good. But if you have permitted carelessness and negligence Veres is very tough. I will not hide it, I have caught it from him too. But if you have achieved something, he does not forget it and tells about it on all levels."

Vasiliy Fedorovich Veres's temperament is known to everyone in the association. And in trying to scrutinize the style of his leadership, his character, and his relations with people, I posed the following question to our interlocutors: Is Veres too zealous? Here is a characteristic answer: You must be zealous in our work. The association is large and its structure is complicated. And today's problems require zealous people. Veres is the motor of our work. People always understand him.

The Prikarpates Association has solved very important and complex tasks. It has restored the Carpathian forest, created large-scale and in some cases practically no-waste production, and has solved many social problems. But certainly this is not the limit. The Ivano-Frankovsk residents will achieve even more impressive successes, for there are purposeful, energetic, modern-thinking people at the helm of the association.

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## ADVANTAGES, IMPROVEMENTS OF SMALL CITIES DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 67-76

[Article by P. N. Tiflov, director of the Pervomaysk Machine and Instrument Plant, Gorkiy Oblast: "A Small City -- Great Concern for Planning and Provision of Public Services and Amenities"]

[Text] I remember the 1950's, the days of my youth. Somehow it went without saying you had to live in a large city -- only there could you achieve success in life. And the larger the city the better. Population size was emphasized with pride. It was noted with satisfaction when a city reached the half-million or million mark.

In TEKHNIKA -- MOLODEZHI, ZNANIYE -- SILA, and other journals which shaped the aspirations of the younger generation the near future was presented in the form of enormous cities with a stream of the most improbable means of transportation racing along the streets.

I remember a later time. What a tremendous impression the first tall buildings with an abundance of glass, airports, cafes, stores, and even newspaper stands produced. Since they were signs of a large city they attracted people, especially the youth, with new force.

Of course, it is not only these purely external signs which establish the merit of large cities. There are more opportunities for creative development and occupational growth and a greater choice in position in life. The level of domestic and social services is higher and leisure is more interesting.

In large cities managers of enterprises complain of job flitters who change jobs easily and thereby harm production. But we in small cities are troubled by something else -- skilled personnel leave for good. You must not avoid thinking about it but analyze the situation and find the reasons in order to influence them. It is impossible to work more or less successfully with a high population drain.

The decisions of the 26th CPSU Congress for the 1980's have defined a timely policy of limiting the growth of big cities and developing small and average-size cities.

How should a small city be developed? How can people be convinced that they should live precisely here? After all many of them, especially young people, reason in the following way: working in a small city is only temporary; second-class people can work here -- those who need nothing or old people for whom it is too late to move.

Above all something must be done to convince people that it is a place in no way worse than others and in some way the best on earth. Make a small city a little Moscow or Gorkiy? This is a contest we know we will lose. And then -- why repeat the shortcomings of the large city?

This is probably the optimal decision: do not repeat these shortcomings; on the contrary, insure that they do not exist but develop and emphasize the merits of a small city. In principle this is nothing new. What is new, perhaps, is in the uniqueness of the moment: in the precisely determined shortcomings of the large city today; the substantial and increasing use of vehicles by the population; the ease and accessibility of trips to great distances; the development of radio, television, and telephone service; and finally, aggravated ecological problems.

So, the shortcomings of the large city. One glance at the photograph at the beginning of the article is enough to understand how difficult it is in this pile of houses to maintain the necessary living conditions. And what if we look into the future? Will it generally be easy to create conditions worthy of a man of the communist future in a large city? To save him from the congestion, anxiety, noise, waiting lines, and transport problems? To make it possible to easily and often commune with nature, to sit in solitude and quiet when desired, to breathe genuinely pure air? After all, the price of all this rises significantly every decade.

It is very difficult to answer these questions and it is very difficult to guess even the near future. I again remember an illustration from TEKHNIKI -- MOLODEZHI in the 1950's which depicted a lively street of the future. It was to a great extent confirmed in 30 years. But did someone imagine that a street would emit such a roar that it would be impossible to fall asleep or that the air on it would be unfit to breathe? We realized this much later.

It is often said that those are the objective consequences of society's development in the epoch of scientific-technical revolution and the inevitable costs which must be accepted as they are. The urbanization process goes on inexorably in all developed countries. For millions of people, the future is not even large cities but gigantic urban agglomerations and megalopolises which stretch for many hundreds of kilometers. The megalopolises which are developing from San Francisco to Los Angeles and San Diego in the United States, the Ruhr Basin in the FRG, and others are cited as examples.

It is very probable that in capitalist countries with their spontaneous nature of development, megalopolises are the realistic future. It is possible that the preconditions for the formation of enormous urban agglomerations exist in our country as well, but is it inevitable that they must be realized? Under socialism, in all likelihood, it will be as the society wishes. And does it wish to live in megalopolises?

From time to time architects and thinkers propose plans for cities of the even more distant future: here a continuous conical design a meter and a half high, there a floating island, there a compact city, and so forth. How comfortable: everything around, everything provided for. It is really comfortable if one is only speaking of bees or chickens. But people... People can driven into those conditions, but why? Is it really impossible to imagine a more favorable future? Not a utopian one but one based on the realistic capabilities of the economy and conforming to the action of economic laws under socialism? I do not think that our children and grandchildren will love nature, clean air, quiet, and solitude less than we do. On the contrary, they will love them more, since they will cost more to have.

Is it bad or good to live in such a building (photo above)? [Photo depicts a long, rather plain multi-story building with balconies and windows]

Various answers are given to this question. "A fine building!" How delighted he was after it was built since it was one of the first of its kind! "Perhaps it is a little crowded, but what else can basically be offered in a large city today?" "There is not much good about it, but then is it better in your hole?" I can answer the latter in the following way: it is better if all the comforts have been created in a small building. But the point after all is not one residential building but the totality of conditions in the given city.

According to what model should a small city be made so that it acquires attractive force? If you speak in general, then you must insure that the residents, and especially the young people, love it. It is hardly appropriate to speak of models here. Things must not be done by model but in a way that insures that any small city has its own unique face. It is by no means necessary to demolish the entire city or construct housing with exotic architecture. It is simplest of all and obviously better to preserve the features and characteristics of the city which have developed historically, that is, the center with its streets, intersections, and squares, improving only its obvious absurdities. This is cheaper and more tactful in regard to the residents of the city. Insuring that the city has its own face is enough.

It would seem that you could not think of anything simpler. In practice, however, when the master plan and the plan for detailed lay-out of the city are being developed, these requirements are by no means always met: sometimes some rules are broken so it is impossible to preserve the old; at other times an existing part of the city does not comply with the new norms; or possibly the developers were simply indifferent. As a result, all of the old buildings and streets have to be demolished and everything done over again, plunging the city into a perpetual turbulent condition for decades. Well, city people who think about the future of their city with love must first of all answer these questions.

Then it must be considered how to regenerate and update old regions. It is by no means necessary to build them up as soon as possible in order to do this. Some people think that the closer and higher the buildings the better. That is how the shortcomings of large cities are repeated.

Other conditions being equal, it is above all necessary to start on the streets and roads, beginning with the main road which connects the city with the outside world. Let people have the opportunity to go to the oblast center and to other cities by bus or automobile. Of course, everything cannot be covered with asphalt in a short time, and that is not the only work to do. But the roadway and the sidewalks of the main roads should be done on the level of a large city. Of course, this is difficult, but it is possible if the forces of the city and the enterprises are combined. The street's roadway must first be expanded. Usually there are no particular difficulties with that; only poles and -- unfortunately -- planted trees have to be dealt with, plus illegal fences. Then curbs must be put in and sidewalks laid.

Our plant widened one of the most crowded routes of the town: it was an ordinary asphalt road 6 meters wide. It was expanded to 12 meters, curbs were put in, and sidewalks 3 meters wide were laid. In order to do this, new traffic control barriers had to be installed at the railroad intersection; two railroad sidings had to be narrowed; part of a deep (6 meter) pond had to be filled up; poles had to be taken down and an intercity communications cable laid underground; the poles had to be taken away; and the plant's hedge had to be moved. Only after this could the actual road work begin. But this is a complicated case; usually the volume of preparatory work is smaller.

Before asphalting the streets, motor transport traffic in the town should be studied very carefully. The roads and streets on which motor transport comes into town from dirt roads must be asphalted a little further out. After rain, vehicles bring in a lot of dirt and the further the approaches are asphalted, the less dirt reaches the central streets.

Nonetheless, systematic cleaning of the asphalt is needed in a small city even more than in a large one because of the dirt. As a rule, there are no cleaning staff or street cleaners, and people are not accustomed to it. The solution to the problem is the same as in large cities: clean up using the forces of the enterprises and organizations. Experience shows that for the most part people regard this measure with understanding. Of course, at the same time staff and street cleaning machines must be sought.

There is no need to prove the necessity of landscaping. This is a vast and untouched area of work. Above all it must be converted from the spontaneous to the purposeful. In particular, vary the types of trees and shrubs planted. Too frequently landscaping in central Russia is restricted to poplar, white willow, and American maple [box elder], and at best linden and ash are added. But why not plant maple, elm, oak, and pine, which are in our forests? What beautiful trees! They say that poplar and American maple grow rapidly under any conditions. Whatever, I would wait. After all it is boring when all around are nothing but poplars, although they are certainly champions for oxygen production. And why not plant so-called exotic trees? Here in Gorkiy Oblast they are the chestnut, Lombard poplar, weeping willow, arbor vitae, and locust. If they are taken care of properly, they will grow in our regions. But then how much our central Russian landscape will be varied when it gets a southern flavor!

It is a pity when trees are pruned to please fashion. Today when as many trees as possible are needed to purify the air, trees should be trimmed only as needed: for example, if they are touching wires, obstruct the view of a beautiful building, are growing in an overgrown park, and so forth.

This landscaping is a long and complicated job then. The plant has been working on it since 1975. So far about 1,500 new trees have taken root. For various reasons 500-700 specimens have died. When you consider what still remains to be done, it seems that the plans run for many years into the future, into my own pension. Therefore, I would like to advise those who want to begin working on landscaping in earnest to begin as soon as possible.

I have developed the deep conviction that small cities today must not so much build as put what exists into order. Usually there is an organization along the lines of the Grazhdanstroy [civil construction] trusts in each rayon center which engage in repair and construction work. It has turned out that in recent years these organizations have begun working more on construction and less on repair. This is simpler and at first glance gives better results: actual new facilities appear. But only at first glance. The quality of construction, to put it mildly, leaves something to be desired, and frequently produces a pitiful impression. I believe that it is better to "lick clean" and update facilities using capital repair means rather than simply building new ones. An old but wornout building looks much more attractive than a carelessly constructed new one. Finishing should be on the large city level, otherwise the new construction is not worth a penny. All the more so since the forces of a repair-construction organization are limited. While it goes all out building a new project, dozens of old ones wait in vain for much needed capital repair. As a result, an unfavorable opinion of the city takes shape, above all among its residents who always have the opportunity to compare it with other cities.

Of course, new construction is essential but first a modern, high level of preservation of old buildings must be created and the tone must be set to insure that the residents begin to respect their city and themselves. Any building can be updated, even old wooden dwellings. To do this it is not necessary to paint and decorate it in the Old Russian or fairytale style as is being done with roadside restaurants, although, of course, this is also not forbidden -- it depends on what the building is for. But in the usual instances the windows are made wider, the ceilings higher, something is built on, and some thought is given to the appearance of the facade and the entry. A glass door and modern finishing inside look nice. The effect of this is greater than appears at first glance. Coworkers of such an establishment no longer come to work dressed carelessly. The sophistication of relations with visitors also rises.

In building the new one must not forget about one of the advantages of a small city: it is easier to turn it into a garden-city. To do this, places must be left for future plantings; in contrast to the large city congestion must not be allowed, dwellings must not be built next to busy main streets, and these main streets must be buried in dense greenery. Perhaps this will not always conform to current norms and roads will be longer. But increased price must not become an obstacle: expenditures are repaid a hundredfold.

I like how the town of Elektrenay in Lithuania looks. I think it is one example of a well designed small city. It is no accident that its creators were awarded the USSR Council of Ministers prize for 1982.

I write nothing about housing, plumbing, or gasification of the small city; hardly anyone needs to be convinced of the need for housing construction and modern municipal services without "allowances" for the province. I would only like to note that often the small city "fathers" do not really go beyond this set of problems. Frequently they have no strength remaining for anything else. There is only one solution: all enterprises and organizations of the city must take part in its decoration, and not under compulsion but from their hearts. After all, it is done for you and for your own workers. And then it becomes a city where young people will remain, and consequently personnel matters will a little easier for enterprises.

The lion's share of concern for the city falls on one or several large enterprises. Moreover, the city is in principle in no condition to solve some problems without the assistance of large enterprises. In our little city, for example, if there were no plant, it is unlikely that curbs on the streets would have appeared soon. These enterprises, so to speak, are experts in these things, even to the deciding word, what to do and not to do in the city.

It is best of all for the city council of directors, guided by the rayon or city party committee in close contact with the city Soviet ispolkom to organize work on improvements.

The enterprise's participation in improvements obviously must begin with putting its own territory in order. One must not forget about the advantage of small cities here: they are constrained very little by territory. Tasks can be performed which would be absolutely unrealistic in a large city. For example, we are turning our plant grounds into a park.

All work on improvements -- in the plant and in the city as a whole -- has one thing in common: it is very difficult. Something can be achieved only when the first manager personally takes up the matter. The set of needs are the usual: money, workers, material resources, equipment. Only just as often no one allocates anything for these purposes and therefore they must be found. Just take equipment. It is difficult to imagine that some enterprise has extra excavators, bulldozers, and dumptrucks. Requests for them from shops and offices are much greater than what they have. The dividing up begins. Use them on the production plan? On construction? On capital repair of shops? Housing? On the repair of water pipes? A Pioneer camp? Subsidiary farms? Improvements will undoubtedly to be left behind.

Many uncommon problems which only the first manager can solve also arise. For example, one of the main thoroughfares is "just begging" for trees, but it is precisely along this route that a 6-kilowatt cable has been laid underground. If the entire row of trees is moved back, it will be ugly. Make the plant a park and everyone is "for" it, but when they must give up suitable space for the benefit of green plantings, it is not simple to get the decision, or it sometimes conflicts with the plant's master plan.

At the plant, the iron foundry and one of the assembly shops are located parallel to each other and the distance between them is 20 meters. This conforms to the norms but, as experience has demonstrated, this is a "dead" zone; even poplars have difficulty growing there because of the high dust level. The question arose of building decontamination facilities for the discharge from the foundry shop. It turned out it was possible to do this only by destroying the only row of poplars on one side of the passageway. Of course, if the shops were built over, we would put a distance of at least 30-40 meters between them.

Of course, it cannot be said that everything discussed has been done in our small city and at our plant. Some things are done, some things are being done, and some things we are only aiming at. Least of all do we claim to have exhausted the question. But we wanted very much to share our thoughts about the fate of the small city.

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## INEQUALITIES IN WAGE SYSTEM, STRUCTURE OF MANAGEMENT REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 76-79

[Article by F. S. Shakirov, director of a gas refinery in Surgut, Tyumen Oblast: "The Right to Manage the Administrative Apparatus"]

[Text] I cannot make generalizations, but I assume that the problems which are such a painful experience for us occur at other plants as well as at ours.

Our gas refinery has an average number of personnel and the annual volume of output sold is up to 120 million rubles. It was built with complete sets of imported equipment and contemporary technology. When I got on-the-job training in similar enterprises abroad I was convinced that we are not at all backward in the technical sense, but the planning of labor and organizational structures are not keeping pace with the technical level. It is as if a modern motor vehicle were put on wooden wheels.

But what is the reason?

When planning the number and structure of industrial-production personnel, the rights given to enterprises are completely inadequate. Assignments to save labor are usually fulfilled by reducing the number of management personnel. Does this proposal not mean that the labor of this category is less valuable than the labor of workers and shop engineers? If it is true, then who should improve the management of production and actuate scientific-technical progress? And find those ways to save labor which do not harm production? I think that what the fate of engineering-technical personnel and personnel employees should be is more apparent at the site than "at the top."

The imperfection of the labor payment system for engineering-technical personnel is obvious. The payment does not have adequate stimulative force. We establish the amounts of post salaries with strict adherence to average values. And once the amount is established, it can remain the same for an indefinite period of time. Incentive would begin to operate if within certain limits it were raised from the minimum to the maximum depending on the employee's length of service. When an employee is transferred to another, higher post on the initiative of the administration, the amount of the salary should be set within new limits in accordance with the employee's length of

service at the previous post. But if an employee is transferred to another post by his own wish, the salary is set at the lower limit. Under the proposed system the sum of engineering-personnel salaries could reach the upper limits of post salaries, which, however, contradicts the existing system for calculating the wage fund for engineering-technical personnel. But should we really do this? The gains from keeping personnel and stabilizing the engineering and management apparatus will be much greater.

It is also difficult to avoid the question of the difference in sizes of the labor payment for engineering-technical personnel and workers to the benefit of the latter. This discrepancy is becoming an increasingly widespread phenomenon. If we are speaking of one subdivision, the picture looks absolutely paradoxical. We achieved a substantial increase in labor productivity using the progressive brigade form of labor organization and combining occupations. The wages of the workers also increased. But the direct organizers of the labor process -- the chiefs of shifts, mechanical engineers, and foremen -- remained on the sidelines, as it were.

The chief of a technological shift, for example, now receives 15-20 percent less than a senior operator or a senior machine operator. Incidentally, the training program of an engineer for this post as a rule presumes traversing the path from a common operator and then a senior operator, since he must learn to perform all the practical operations in the running of technological processes. And so an engineer who has achieved high occupational skills must transfer to lower-paying work. This looks like punishment. The situation is approximately the same for foremen, mechanical engineers, and certain engineers of production and technical departments.

In this way, a tangible obstacle to strengthening one of the most important and largest links of the organizational-structural chain exists, and the development of organizers and commanders of production is ultimately made more difficult. A paradox arises: occupational skills grow and the post level increases, but the labor payment decreases in transferring to a new post.

The practices employed to shape the organizational-staff structure of enterprises also need to be improved. Within the framework of the sector or even the subsector, transition to the new post can be structured on ratified models which contain a set of constant elements, but the structure of each departmental element must be established directly dependent on the actual indicators -- production volume, value of assets, and so forth.

It would be wrong to assert that none of this exists today. Moreover, from a formal standpoint no other principle exists. But at least two factors must be taken into account: subjective creativity and the 1:5 ratio between engineering-technical personnel and workers, whose origin and grounds are unknown to us, as well as the regulation of the ratio between posts for senior and rank-and-file engineers. It is precisely these factors which have a decisive impact on the formation of the organizational structure. It seems that it would be more advisable to take occupation skills required for each particular case as the basis for calculating the number of each category of employees and official posts. After all, a senior engineer differs from a rank-and-file one only by level of skills. But why, if the technical level of

production requires a comparatively larger share of more highly skilled posts, can there not be more of the former than the latter? And why is only one engineer for five work posts common when the technical level of production is highly automated and a high proportion of engineering labor is more advisable? We have been forced to find a solution which is not the best -- maintaining extra workers to keep the necessary number of engineers.

It seems that it is not always advisable to put a sign of inequality between savings on the wage fund of the workers and ceilings on maintaining management personnel. This is the first thing. And secondly, official norms, if, of course, they conform to the contemporary technical level of production, should become law both for us, the producers, and for higher planning levels.

There is one other question. The activity of an industrial enterprise today is under the supervision of approximately 20 state and social organs, institutions, and intradepartmental offices. All of them plan their work autonomously, and accordingly checks are carried out separately. But after all, each check diverts the apparatus and offices, disturbs the rhythm, and means additional work. For example, in the first 4 months of 1983, nine commissions checked us, and we knew of only two of them in advance; therefore we consider them planned check-ups. We do not know who else will check us, when, and how many times. Undoubtedly, it is illegal to insist that checks be abolished, but the number of them must and obviously can be reduced.

Such organs as Gosgortekhnadzor [State Committee of the Council of Ministers for Supervision of Industrial Safety and for Mining Inspection], Gospozhnadzor [State Fire Inspection], the power engineering inspectorate, the sanitary and epidemiological station, the basin inspectorate, nature conservation, and so forth could be combined into one comprehensive auditing commission, since their requirements are sufficiently interrelated. Or, for example, the Committee of People's Control, financial organs, Stroybank [All-Union Bank for the Financing of Capital Investments], and Gosbank could also make up one comprehensive brigade. The only question remaining is who or what organ should be authorized to coordinate this work.

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## NEED FOR IMPROVEMENTS IN PERSONNEL WORK NOTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 81-91

[Article by V. Ya. Belen'kiy, chief of the sectorial scientific research laboratory of social planning, sociological research, and psychological labor of the tire industry, Dnepropetrovsk: "From Hiring and Firing to Managing Personnel." Passages rendered in all capitals printed in boldface]

[Text] If one peeks into the offices of the director and other managers, takes photographs of their work day, and compares their structures with those which existed 10 years ago, progress is clearly indicated: more and more time is being devoted to the "human factor," and to managing the work force. The ever-increasing significance of work with personnel is due to a number of socioeconomic processes. Profound changes are occurring in the occupational-skill structure of the workers, combining of occupations is widespread, conditions of labor are changing, information-communication ties are being intensified, and the general level of culture and education is rising. The social functions of enterprises and the social activity of labor collectives are expanding. The creation of a favorable socio-psychological microclimate which determines the nature, content, style, and ethics of interpersonal relations at work, the worker mood, mutual understanding among employees, and the degree of solidarity of the collective is becoming a meaningful incentive of labor activity. These changes occur against the background and under the influence of the increasing scarcity of labor resources.

A manager devotes more and more time to managing the work force, and this is natural. But are all expenditures necessary and substantiated? A large part of this activity stems from the fact that at the enterprise he does not have a sufficiently strong and competent service on which he can rely in personnel work. In its present form the personnel department does not meet these requirements. The personnel service has not become the management center of the basic streams of socio-demographic information. Its technical base is far from the level of the age of automation. The procedures, methods, and tools of scientific organization of labor have not yet entered its offices.

In our opinion, creating a scientifically substantiated state system of work with personnel will, in the first place, help put the organizational-functional structure of the personnel service in order; secondly, it will help

improve the methodological tools which determine the content and direction, forms, methods, strategy, and tactics of work with personnel; and thirdly, it will help develop the technical base.

THE FIRST QUESTION IS REORGANIZATION. First there was the buro of hiring and firing which performed bureaucratic functions. And although the obligations of the associates of the personnel service were expanded and the tasks made more complex, the attitude toward it did not change. The clearly obsolete picture of the content of the activity of the personnel department is explained by the routine nature of the work -- filling out documents, clerical work, accounting, and reporting.

The enterprise's personnel department has become, descriptively speaking, the Achilles' heel of management. This is precisely where the smallest and lowest paid staffs are found today. This is not surprising: up to this point there has been no normative-goal base of this service, that is, the principles for determining its goals, tasks, functions, and staff structures have not been worked out. It is for this reason that organizational and indoctrinational work and the formation of unified labor collectives of personnel workers are not being studied adequately, and accountability for personnel turnover, the condition of discipline, adaptation of young workers, on-the-job training of young specialists, and other purely personnel questions are transferred to the shoulders of shops, departments, and public organizations.

But the development of production makes its own demands. In the first place, the personnel service must to some degree be a research subdivision which studies the wide spectrum of personnel policy problems. Secondly, it must be an organizer and scientific methodologist of the comprehensive system of work with personnel. Thirdly, it must be the service which monitors personnel policy in enterprise subdivisions and is granted certain rights, levers, and means of material and moral incentive.

How should the reorganization of personnel departments be arranged in practice? Above all the functions of personnel and labor services need to be integrated. Formation of personnel cadres and their rational use is inseparable from the economic evaluation of employees' labor. These functions are unjustifiably separated today. The personnel department establishes the employee's suitability for the post occupied or the occupation, while the department of organization of labor and wages determines the post salary or wage rating. It is no secret that enterprises generally operate with two types of numbers, which as a rule do no coincide: one balance is the prerogative of the personnel service, the second, of the economic service.

The different subordination of these services complicates their relations with each other. Is it not simpler if the director of the enterprise takes the tasks of replenishing staffs and expending the wage fund upon himself? By combining the levers of management of personnel and labor in the same hands, we will substantially expand opportunities for the efficient use of labor resources.

It would be efficient to add the department of technical instruction to the "personnel -- labor and wages" coupling. Of course, we are not speaking of a

mechanical consolidation of these services, but rather precise delineation and redistribution of their functions. We do not have a plan for the organizational structure of the department of personnel and labor worked out in detail, but we would nonetheless like to express some considerations.

The structure of the department is traditionally sectorial. These sectors could include the following:

THE SECTOR FOR PERSONNEL DOCUMENTATION AND THE PERSONNEL RECORDS SECTOR -- the traditional cores of the personnel service, but the content, goals, forms, and methods of their work must be fundamentally changed. Their efforts are directed at the selection, systematization, and analysis of socio-demographic data based on means of automation and computer equipment. The subsystems of the Personnel automatic control system are not a tribute to fashion for them, but an objective necessity;

THE SECTOR OF VOCATIONAL GUIDANCE AND SELECTION (OR THE SECTOR OF VOCATIONAL GUIDANCE AND VOCATIONAL AND SOCIO-PSYCHOLOGICAL DIAGNOSTICS) studies the sources for replenishing the work force of the enterprise, interacts with regional organs of labor resource management, and develops vocational profiles, offering them as information for each person who comes to the plant to ponder, and in this way helping the novice make a sound vocational choice.

For many large enterprises, especially those composed of young people, it would be useful to create a SECTOR OF VOCATIONAL AND SOCIO-PSYCHOLOGICAL ADAPTATION OF YOUNG WORKERS. The socio-psychological passport of the person who is adapting can be of great assistance in the work of the managers of labor collectives -- brigade leaders, foremen, and so forth. When this passport is being put together, both sectors would, on the one hand, reveal the characteristics of the personality and on the other, suggest a way for stable contact of the employee with the manager and the collective. The organizers of production would succeed in increasing the coefficient of the indoctrinational impact severalfold because of this.

Personnel service can hardly do without a SECTOR OF WORK EVALUATION OF WORKERS AND ENGINEERING-TECHNICAL PERSONNEL AND A SECTOR ON THE ORGANIZATION OF SOCIALIST COMPETITION, whose task would be the joint search for forms of development of a person's creative potential and increased labor productivity.

The increasing role of training and raising employees' qualifications necessitates the creation of a SECTOR OF PERSONNEL TRAINING AND A SECTOR OF SPECIALIST TRAINING AND MANAGEMENT OF THE UTILIZATION OF ENGINEERING PERSONNEL. Today most engineers who have graduated from a VUZ and entered a plant find themselves at the will of chance. The point is that management of the utilization of these specialists is not envisioned among the tasks of any of the structural subdivisions of the enterprise. So, 1,500 engineering-technical personnel at the Dneproshina Association are served by just two personnel workers -- the inspector and the laboratory assistant. It is no accident that engineering-technical personnel often switch to work on machines. There are more than 100 engineers and about 800 technicians at our association who are employed as workers.

Among other branches of the department of personnel and labor we will single out the SECTORS OF NORM-SETTING AND LABOR INCENTIVE, MANAGEMENT OF THE UTILIZATION OF WORK TIME, BRIGADE FORMS OF ORGANIZATION AND PAYMENT OF LABOR, SCIENTIFIC ORGANIZATION OF LABOR, PLANNING AND SUBSTANTIATION OF STRUCTURAL SUBDIVISIONS AND STAFFS, AND DEVELOPMENT AND IMPROVEMENT OF THE ENTERPRISE MANAGEMENT SYSTEM.

The creation of a new personnel subdivision will in our opinion be complete when its structure includes a LABORATORY OF SOCIAL RESEARCH COMPOSED OF THE SECTORS OF ECONOMIC AND SOCIAL PLANNING, SOCIOLOGICAL RESEARCH, THE PSYCHOLOGY OF LABOR AND MANAGEMENT, THE PSYCHO-PHYSIOLOGY OF LABOR AND ERGONOMICS, AND INDUSTRIAL AESTHETICS.

In this way, the subject is the creation of a powerful department of personnel, labor, and social management numbering several dozen people. The post of deputy director for personnel, labor, and social development of the collective is also essential. Thanks to these innovations, social planning can be correlated with technical-economic planning on an equal rights basis. Unfortunately, the artificial separation of the functions of economic and social planning leads to a situation where plant services often rely on the sociological subdivisions created and begin to deviate from systematic comprehensive target-program planning.

THE SECOND QUESTION IS THE OCCUPATIONAL QUALIFICATIONS OF EMPLOYEES OF PERSONNEL SERVICES. Today they are most often filled with nonspecialists. You find reserve officers, philologists, librarians, and engineers. The not unfounded opinion has taken root that, it is said, a good and highly qualified specialist cannot be inveigled into the nonprestigious post of inspector of personnel services. In addition to the low prestige, their wages are on the level of office personnel. This means that the personnel department must be equal in rank to such departments as economic-planning, financial, organization of labor and wages, material-technical support, and others. But in order to do this, engineer-methodologists or engineer-organizers with broad specializations must be trained by higher education. Judging by the demands of production, the department of personnel and labor should consist of psychologist-organizers of acceptance for work, engineer-psychologists of production adaptation of young workers, sociologist-inspectors of labor and social discipline, engineer-organizers of instruction, legal advisors on labor and pension legislation, psychologist-organizers of vocational guidance, engineer-mathematicians of social statistics, engineers of automated subsystems of personnel management, psychologists on dismissals, economist-sociologists of stabilization of labor collectives, and social psychologist-producers who organize mass events, rituals, and ceremonies. It is precisely these licensed specialists which the personnel service needs.

This list may seem too long: where are the specialists to come from? But we believe that personnel work must be taken up on a grand scale. Another point is that up to this point higher education does not train specialist-personnel workers. Education specialization in the field of personnel work must receive legal, methodological, and organizational support in the USSR Ministry of Higher and Secondary Specialized Education as soon as possible.

THE THIRD QUESTION IS WORK WITH PERSONNEL. Experience shows the advisability of creating special educational-methods complexes or centers of work with personnel at large industrial enterprises. They should have special areas equipped with scientific-technical and laboratory-experimental equipment, vocational-diagnostic simulators, and methodical and scientific research tooling, and they must be made up of personnel specialists with higher education, industrial sociologists, production pedagogues, social psychologists, and so forth.

On the initiative of a number of ministries and enterprises, an active search is underway for new methods of training personnel, in particular, the study of questions of creating and locating sectorial educational centers to train and increase the qualifications of worker personnel is reflected in the coordinated plan of scientific research work on labor of the USSR Ministry of Petroleum Refining and Petrochemical Industry for the 11th Five-Year Plan. In addition, analysis of plans for the economic and social development of labor collectives, of the tire industry for example, elaborated for the current five-year plan shows that questions of the fundamental reorganization of work with personnel and the creation of its scientific and material-technical base are completely omitted. Why not include the elaboration of a comprehensive target social program of personnel work in the structure of the plan for economic and social development of the collective?

The development of such programs will, on the one hand, strengthen the role of personnel services, and, on the other, demonstrate the necessity of centralized work with personnel. Then, for example, the question of transferring the indoctrinators of young worker dormitories from the municipal-housing department to the personnel department or the personnel training department will arise.

The experience of the Dneprovskiy Machine Building Plant imeni V.I. Lenin is noteworthy in this respect. After the indoctrinators were subordinated to the personnel training department, they were able to select employees with pedagogical education for their posts and coordinate the indoctrination process in labor collectives and at the places of residence of young workers.

THE FOURTH QUESTION IS POOR ORGANIZATION OF THE INDOCTRINATION PROCESS IN DORMITORIES FOR PEOPLE WITH SMALL FAMILIES. In recent years the construction of small family dormitories has become one of the efficient methods of solving the housing problem and stabilizing labor collectives. Youth microregions have appeared at many large enterprises. The Dneproshina Association, for example, built 6 small family hotel-type dormitories with 1,380 one-room apartments during the years of the 10th Five Year Plan. However, as a rule the introduction of cultural-domestic facilities was put off, and indoctrination work in dormitories was omitted altogether.

Obviously, organizational-indoctrinal, cultural-domestic, and sports-play microcomplexes which are headed by pedagogue-organizers must be set up in youth microregions. The social microstructure has developed satisfactorily in our youth microregion: it includes a dispensary, a post office, a food store, a dry-cleaners and tailor's shop, a school, a children's combine with a swimming pool, and a consultation center of the children's polyclinic;

recently a children's sports-play complex was built. But we believe that the task is substantially broader.

A complex of areas for public-cooperative use, including a children's play room, a library, a children's room for days off, a ceremonial hall, and so forth, must be organized in each small-family dormitory. More than 2,000 children live in the microregion; it would be good to equip Pioneer rooms and clubs for them and set up sports sections. A formalistic understanding of staff-financial discipline stands in the way of these innovations at the present time.

**THE FIFTH QUESTION IS THE FUNCTIONAL ACTIVITY OF THE DEPARTMENTS OF TECHNICAL INSTRUCTION.** These must be reorganized as well. In particular, they should be renamed departments of personnel training and production pedagogy.

Of course, renaming them is not the main thing. Reorganization must be aimed at broadening the boundaries of vocational instruction and developing new forms and methods in training workers, engineering-technical personnel, managers, and reserves of management personnel. No less urgent is the introduction of sociology and social psychology into the circle of subjects taught.

Uniform educational programs also need to be developed. The need for them is due to a number of reasons. Among them are the introduction of the "vazovskiy" [possibly referring to "Volga Automotive Plant"] system of vocational transferral of workers; the development of "career profiles," that is, the planned organization of vocational post growth; and dissemination of the brigade form of organization and labor stimulation with distribution of wages according to the coefficient of labor participation. Worker-brigade leaders need knowledge in the field of management, sociology, psychology, law, and pedagogy.

**THE SIXTH QUESTION IS THE USE OF COMPUTER EQUIPMENT IN WORK WITH PERSONNEL.** In real economic life, personnel processes are analyzed by primitive methods, by hand. Quite often the subsystems of the Personnel automated control system are imperfect and unreliable; therefore, machine and manual personnel "accounting" coexist. Obviously, one of the country's leading mathematic scientific research institutes must be charged with developing a universal automated subsystem of personnel management. In addition to that, a scientifically substantiated standard model of the social passport of the enterprise's labor collective which would conform to the multipurpose objectives of social data must be created. The experience of the Moscow Motor Vehicle Plant imeni Leninskogo komsomola, which introduced the "Labor -- Daily Life -- Health" socio-hygienic subsystem merits attention. It takes into account social data on an employee for 350 characteristics.

**THE SEVENTH QUESTION IS ONE OF THE MOST IMPORTANT WHICH DEFINES THE COMPREHENSIVE APPROACH TO WORK WITH PERSONNEL -- THE CREATION OF A BROAD NETWORK OF SOCIOLOGICAL SERVICES.** Until now the status of the sociological subdivision, its organizational structure, functional subordination, rights and obligations, and staff size have not been determined. The scientific research activity of industrial sociologists and psychologists has been poorly

coordinated and their progressive know-how is not being generalized, although the achievements of many sociological services are apparent and convincing. The publication of a special yearbook on problems of industrial sociology would play a large role. Obviously, a standard model of a comprehensive system of work with personnel at an enterprise is also needed.

THE EIGHTH QUESTION IS THE MANAGER AND PERSONNEL WORK. Work with personnel is not exhausted by the activity of a specialized service. It is included in the duties of every manager. Is he prepared for it? The point is that no one will teach him this. Of 5,000 VUZ instruction hours not even 5 are allocated to train the future specialist for the role of organizer and indoctrinator of the collective.

In the early 1970's, the USSR Ministry of Higher and Secondary Specialized Education introduced practical socio-political training for students. This was already a definite step forward. Concurrently, a number of VUZes opened special courses on organizational skill and speech sophistication, industrial sociology and production pedagogy, work ethics, and the psychology of the personality. Lecture and practical studies for the most part on the organizational, pedagogical, and socio-psychological activities of a manager became part of the instruction process. Course and diploma work or compulsory sections in diploma projects devoted to the social factors of production have become common. Nonetheless, additional progress in the matter is needed.

But how to begin? Above all, create departments of production pedagogy and psychology in the country's VUZes. It is advisable to disseminate the experience of VUZ-innovators, for example the Kharkov Aviation Institute, Kiev State University, the Omsk Polytechnical Institute, the Moscow Chemical-Technological Institute, and the Ryazan Radio Engineering Institute which have introduced instruction in the new disciplines to students and have utilized effective forms of indoctrination in management sophistication. A curriculum approved by specialists of sectorial institutes for raising qualifications and departments of technical instruction at enterprises and associations is needed. Such a curriculum would include special courses: the work style of a manager; work ethics; scientific organization of management labor; clerical work; sophistication of speech; basics of oral propaganda; the art of oratory; organization of monitoring and verification of fulfillment; and so forth. A special course on labor legislation and discipline practices merits special attention.

The publication of a series of practical manuals on topical problems would be of use to a broad circle of managers. They would include frequently encountered situations in managing the labor collective and would cite their sociological and socio-psychological solutions. The study of a special course on the organization of socialist competition should be introduced. A topical course on the organization and psychology of mass events, holidays, rituals, and ceremonies also merits special attention.

THE NINTH QUESTION IS THE ORGANIZATION OF THE PUBLICATION OF A SPECIAL SCIENTIFIC-PRACTICAL JOURNAL DEVOTED TO PERSONNEL PROBLEMS. To one extent or another these problems are reflected in such journals as SOTSIALISTICHESKIY TRUD, KADRY SEL'SKOVO KHOZYAYSTVA, EKO, VOPROSY EKONOMIKI, SOTSIALISTICHESKOYE

SOREVNOVANIYE, SOTSILOGICHESKIYE ISSLEDOVANIYA, and several others; nonetheless, we are speaking of a more systematic, purposeful, and focused publicistic method of propaganda, generalization, and discussion. This journal could be published by the USSR State Committee for Labor and Social Problems, for example.

As was noted at the November 1982 Plenum of the CPSU Central Committee, personnel must be correctly assigned so that politically mature, competent people with initiative, organizational abilities, and a sense of the new, without which contemporary production cannot be successfully managed in our time, are in the decisive sections. The requirements of scientific management, which presume comprehensive and systematic solutions for every national economic problem, must above all be tied to improving the forms and methods of work with personnel. The increased role of the subjective or human factor once again poses the question of creating an integrated system of personnel work, which is one of the conditions for intensification of the economy.

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#### NEED FOR ATTENTION TO PERSONNEL PROBLEMS NOTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 91-92

[Article by G. D. Shmygovskiy, chief of the sector of labor sociology, sectorial laboratory of social planning, sociological research, and the psycho-physiology of labor of the tire industry, Dnepropetrovsk: "The Plant Begins... With a Little Window"]

[Text] The personnel department is open to everyone. In theory, the plant starts there just as a theater starts at the cloakroom. I do not want to be hired for work at VShZ -- the Voronezh Tire Plant, but I try to put myself in the position of such a young person. He would clearly be a secondary school graduate. What would he like to be? He says that if you can judge by the announcement that "the plant needs . . ." he should be met cordially and affably. Like in the prewar song about the miner whom the comely girls met and took with them.

Everything was simpler in those years when the song was composed. "And the young fellow headed for the mining face. . ." No agitation or explanation was needed. Today the situation has changed sharply. The fellow would want to know what kind of an enterprise the Voronezh Tire Plant is, what kind of work is done there, what the collective is like, and what benefits it offers a novice, and so on; many other questions swarm in the head of a person who has spent 10 years on a school bench and who has hardly tasted life yet.

On the walls of the room are 2-3 sparsely filled-in charts. They not only do not advertise the enterprise in that form but set you against it. My acquaintance the novice stands in line at a small window through which all "vocational guidance" is conducted with those who wish to get a job at VShZ. The personnel inspector gradually gets "heated up" because they interminably ask the same question: how to fill out the application. The line reached my new acquaintance: he managed without questions. He filled out the application on an insignificant scrap of paper on his neighbor's back. But this is only the beginning of a long road of filling out documents and information. Well, as they say, peace be to him who enters here.

And next door are the "outgoing ones." The inspector records dismissals there. The main entry is "at their own wish." I ask the inspector about

motives. A young energetic woman hopelessly waves her hand: "Who is interested in that!" Indeed, interest is not apparent. At one out of three tire enterprises the "questionnaire for the person being dismissed" lacks even a standard form "application for dismissal." No one talks with the person submitting the application and no one asks why he has decided to leave the plant.

I met my acquaintance once again during my second visit to VShZ. The fellow had filled out an application to leave. We talked, even more so since he was glad to find someone he could speak out to. He believes that young people are not looked on with favor at the plant. Half of all the people who are dismissed are less than 30 years old. The work they get is a little worse and they are forced to do "rush work" more than others. What did he write down as the motive for his dismissal? He wrote "at my own wish." What really induced him to do it? He did not show up for work for a week. There is supposed to be a serious penalty for this, but they did not punish him; they left his work booklet "clean," only demanding conditions. "Everyone does the same thing," announced my acquaintance confidently.

What fine indoctrination work they are doing there!

An enterprise not only begins with the personnel department but it ends with it. But when attention to personnel problems is weak on the part of the administration, as at VShZ, the personnel department becomes a busy passageway. If someone doubts this, let him sit in the personnel department for a few days.

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## NEED FOR IMPROVEMENTS IN PERSONNEL DEPARTMENTS NOTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 93-97

[Article by G. V. Shchekin, chief of the personnel department, Kiev Elektropribor Production Association: "One Day in the Life of a Personnel Department Chief"]

[Text] The personnel department of an average-sized industrial enterprise. In accordance with the norms for number of engineering-technical personnel and employees developed and approved by the ministry it consists of seven staff associates: the chief, two senior inspectors, and four ordinary inspectors. Only one of them (the chief) has higher education; one has secondary special education; and the rest have secondary education. (According to data of the Ukrainian Scientific Research Institute of Scientific-Technical Information, only one out of five of the republic's personnel service employees have higher education, while one out of two have no more than secondary education). Four of the seven employees have worked "in personnel" for no more than three years. The current range of post salaries (90-110 rubles for an inspector and 100-130 rubles for a senior inspector) does not permit recruiting more highly qualified specialists. For the most part employees there have practical experience only. Until recently the most widespread type of personnel worker was a military retiree.

0815 hours. The chief of the personnel department catches those who are late at the plant entrance. Choosing explanations, listening to excuses (transport, the alarm clock, a sick mother-in-law) and indignations ("Just think, I've only been late once," "It would be better to watch where the transport goes"), pronouncements of heartlessness, and so forth.

0830 hours. The annual report is at its height (incidentally, there are 27 statistical reports for the personnel department while there are only 20 for bookkeeping, which would seem to be the most "paper-intensive" department in the enterprise. Reports, reports, reports. On age, sex, party membership, qualifications, education, turnover, violations of discipline, work with minors, work with young specialists, pensioners, and women, personnel movement, their replaceability, and so forth, and so forth.

The inspectors manually select the personal cards and personal files of those hired, fired, and transferred and copy the data onto enormous annual report "sheets" (there are also 10-day reports, and monthly reports, and quarterly reports, and for certain data -- even daily reports)! The chief writes the information for the annual report -- 15-20 pages of typewritten text. There is no one to assign to compile the information, in the first place, because of the lack of sufficiently qualified personnel, and secondly, because of the exceptional workload since they perform almost all operations by hand. So, the report. Suddenly a bell rings. The rayon militia department is on the line.

"Hello, Lieutenant Petukhov. Tell me please, do Leonid Petrovich Gmyrya and Grigoriy Il'ich Solomakha actually work at your enterprise? Would you please tell me immediately."

"Do you know what shop they work in? Or even their specialty?"

"No, only their last names, first names, and patronymics."

The inspector to whom the instructions are given must "dig up" three enormous alphabetized books to look for the names. They are finally found. Both people were fired from the enterprise more than a year earlier. (The introduction of new passports which include notes on the place of work of the owner unexpectedly added another function for personnel workers, that of information bureau for internal affairs organs.)

Next comes a series of calls from OOTiZ [Oblast Labor and Wages Department], the planning department, the party committee, the trade union committee, and the rayispolkom with demands for urgent, immediate submission of various personnel data. At the same time visitors come in an endless succession: hiring, transfer, dismissal, official registration of pensions, complaints against a husband, wife, son, or son-in-law; approval of instructions, statutes, and standards, explanation of legislation on vacations, the labor of women and youth, and the application of penalties; a labor discipline and social order violations hearing, and so on.

"Hello. I am calling about job placement."

"What is your specialty?"

"I have none at this point. I want to find out what specialty can be gotten at your plant."

There are more than 200 work specialties at the enterprise. Even a simple enumeration will take more than an hour, and the buzz of visitors can be heard outside the door. A physiologist, a psychologist, and special research would be needed to determine the set of specialties for which this person is most suited. But where are they? The personnel department chief opens the recruitment plan sent to him from above and gives a posting to work in the specialty in greatest demand on that day.

"Come to work as an apprentice lathe operator (milling machine operator, polisher, stamp operator)."

1000 hours. A conference in the director's office.

"Chief of the second mechanized! Why are you disrupting the schedule for delivery of casings to the assembly shop?"

"There are no lathe operators (drill operators, fitters, maintenance men), comrade director."

"Chief of the personnel department! Take measures immediately and inform me tomorrow that they have been performed!"

Even where everything was outwardly fine, the shortage of personnel became chronic at some enterprises long ago. And personnel workers have physically felt all the burdens of a supply service. Supply workers have funds, warehouses, and so on, but where can four milling machine operators and five fitters be gotten by the next morning?

1130 hours -- a meeting of the commission to fight against drunkenness and smoking, 1330 hours -- the council of young specialists, 1615 hours -- a meeting of the trade union committee. ("Once again the chief of the personnel department has brought in requests to fire violators, but where can better ones be gotten?") During the interval between the meetings and the conferences visitors are received, telephone calls are answered, and the plant dormitory, the sponsored school, and the buro of specialized employment are visited.

1700 hours -- the end of the work day and the return to the information for the annual report which was begun earlier. As usual, planning work for the next day and the near future takes place on the way home.

Ask any personnel service chief what hinders his normal work most of all. Routine everyday work. Daily, continuous, mentally overwhelming. Who is to blame for it? Perhaps the chief himself, who does not know how to distribute his work time correctly?

I do not think that is exactly the case.

The complex and important tasks posed to personnel services today require that qualified specialists who have been trained in the system of higher and secondary specialized education be recruited to work on them. It is already evident today that mastering the art of personnel work and knowing the basic rules of personnel management is impossible without personnel service workers of high professional qualifications and competency.

Nonetheless, not one of the country's educational institutions provides for training in the "Work with Personnel" specialty today. This gap in the USSR Ministry of Higher and Secondary Specialized Education leads to the situation where people who are incompetent to be in charge of an enterprise's personnel policy are often hired for the posts of personnel services workers. That is

the first and main cause of the customary work overload of personnel workers. Moreover, as was already noted, the ratified schedules of their post salaries are equivalent to the lowest-paying categories of clerical workers. It is natural that neither legal specialists, pedagogues, psychologists, nor economists are recruited for these posts. The third cause of the inefficient, uncreative, routine labor of personnel workers is its poor mechanization and automation. It is perhaps difficult to find in a modern industrial enterprise a department the labor of whose employees includes so many manual operations as the personnel department. Such systems as time-sheet accounting, movement of personnel, and changes in the sociodemographic features of workers should be comprehensively automated everywhere.

The next reason for the present condition of personnel services, which in no way conforms to the contemporary demands of the development of industrial production, is the attitude which has developed toward personnel departments as third-class subdivisions of the enterprise. First created in the 1930's, personnel departments were oriented to performing a single task -- the organization of hiring the work force. The surplus of labor resources, the substantially smaller number of work positions, low demands for the level of qualifications of personnel made this task easy and made it unnecessary to recruit qualified specialists. Thus has the persona of the "outcast of production," who is presently charged with more than 30 important management functions, taken shape.

The need to reorganize personnel departments on the scale of the entire national economy, the organization of special training for personnel workers within the USSR Ministry of Higher and Secondary Specialized Education system, and sharply increased efficiency in the work of personnel services -- all this is apparent and beyond any doubt today.

What must be done for this? In our opinion, the following things should be done.

The recruitment for work in personnel departments of qualified specialists through the introduction of staff posts of psychologists, sociologists, legal specialists, engineers, economists, and pedagogues, and the adjustment of salaries to correspond to the level of qualification of these specialists.

Liberation of personnel workers from routine work on manual record keeping through extensive use of automated control systems.

Increase in the prestige of personnel departments and their role in the management of production, and repudiation of the fallacious practice of categorizing personnel services as third-class subdivisions.

Organization of training for personnel specialists in the USSR Ministry of Higher and Secondary Specialized Education system on the basis of universities and economic and legal VUZes and tekhnikums.

The merging of personnel departments with laboratories of scientific organization of labor and sociological and sociopolitical research or the transfer of these laboratories to personnel services of enterprises.

Establishment of a unified publishing organ of personnel workers, for example the journal RABOTA S KADRAMI V NARODNOM KHOZYAYSTVE, whose pages would cover progressive domestic and foreign experience in personnel work and print scientific-methods materials on work with personnel.

In the near future personnel departments of industrial enterprises must become genuine scientific laboratories called on to insure further refinement of the "human factor" and the management of public production.

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## PROBLEMS WITH SCIENTIFIC-TECHNICAL INFORMATION DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 98-114

[Article by G. A. Pushkarev, chief of the design group of the Uralmash Production Association, Sverdlovsk: "What Does a Designer Need from Scientific-Technical Information?"]

[Text] There is nothing lacking in that which is complete (Latin).

"These days technical progress is inconceivable without studying and evaluating all the best that has already been created and conforms to world standards. The development of new sectors of industry and increased demands for output quality and reliability all require broad technical information."

These words taken from the introduction to the catalogue "Truby i trubnyye izdeliya" [Pipes and Pipe Articles] (Chermetinformatsiya, 1980) define the essence of scientific-technical information and its goals well. Considering the degree of importance of scientific-technical information, it is not surprising that it is considered "one of the types of national resources which determine the country's socio-economic development" (EKO, No 10, 1979, p 125).

In our country dozens of sectorial organs (institutes) work on questions of centralized scientific-technical information and many intersectorial centers are in operation. Their task is to bring to consumers -- designers, planners, and other interested persons -- all the necessary information on the type of industrial output or on the zone of activity of which they are "guardians."

To what degree does scientific-technical information meet today's demands? How precise, complete, and timely is it from the viewpoint of designers and those who directly transform it into real objects, machines, and mechanisms?

So we come to the design aspect of scientific-technical information.

"I Am Dying of Thirst By a Stream"

The task before you is to select the article which is the best, most economical, and most reliable for today, a pump, let us say, in order to incorporate it into a real design. How can we solve this problem?

It would seem that nothing could be simpler -- we must take out the last issue of the sectorial catalogue. Here various "but's" are lying in wait for us. In the first place, we do not have these catalogues for all sectors and branches of output. And secondly, who will guarantee that the "absolute most" is there if by the time the information in common printed publications (and catalogues are not an exception) comes out, it is already obsolete.

Other informational catalogue lists with innovations exist which are from time to time published by TsINTIKhimneftemash [Central Institute of Scientific-Technical Information for Chemical and Petroleum Machine Building], TsNIITEIPriborostroyeniya [Central Scientific Research Institute of Information and Technical-Economic Research on Instrument Making for Automation Means and Control Systems], TsNIITENeftekhimmash [Central Scientific Research Institute of Information and Technical-Economic Research for the Petroleum Refining and Petrochemical Industry], NIIMash [Scientific Research Institute of Information on Machine Building], and other information organizations and are disseminated by subscription. They can be categorized as operational information, but the commercial services of the enterprise (and they are the ones who purchase articles), and even the designers themselves do not completely trust catalogue lists, inasmuch as they also do not always reflect the genuine state of affairs even though their content is specified by standards.

Taking a serious approach to the matter, when UMTS [administration of materials and equipment supply] services, production engineers, and fitters stand behind the designer, the first thing that interests him after he becomes familiar with the information is -- is this output being manufactured and if so, by whom? You can find out about the fate of articles from the lists of TsINTIKhimneftemash which propagandize new pipe fittings and pumps: whether they are recommended for series production or in fact are being produced (in the latter case the manufacturer is given). And at least then there is something to hold onto, a hope for the designer.

But lists of other central and ordinary scientific research institutes and other "initial" information do not "coddle" the reader. It is true that examples for filling out orders are given in them, but this does not necessarily mean that the article is already being produced. Incidentally, TsINTIKhimneftemash information also does not always match reality.

We analyzed about 10 randomly selected catalogue (2-7 years old) pages on fittings. We could only find confirmation of the manufacture of 3 of them. For example, UF 96219 shut-off valves, S 21152 valves, L 19008 gate valves, K 99047 gates, and others which are listed as "put into production" or "recommended" for production are not being produced.

Information in the sheets has not improved with the introduction of GOST [All-Union State Standard] 7.22-80, which clearly states that catalogue lists should contain data on manufacture and the developer-organization. And the manufacturer must be known since he is the only one who can reliably confirm

send an inquiry. We receive an answer in 1-1.5 months (the average time). If the article is being produced, we include it in the specification.

But it is a little early to rejoice.

From designers and production engineers the documentation launched into production goes to the material-technical supply service, whose employees usually work within the strict confines of "from" and "to" (from what is known to them to what is unknown).

"A new article? But is it in our order register? And did you put in a preliminary request for it?"

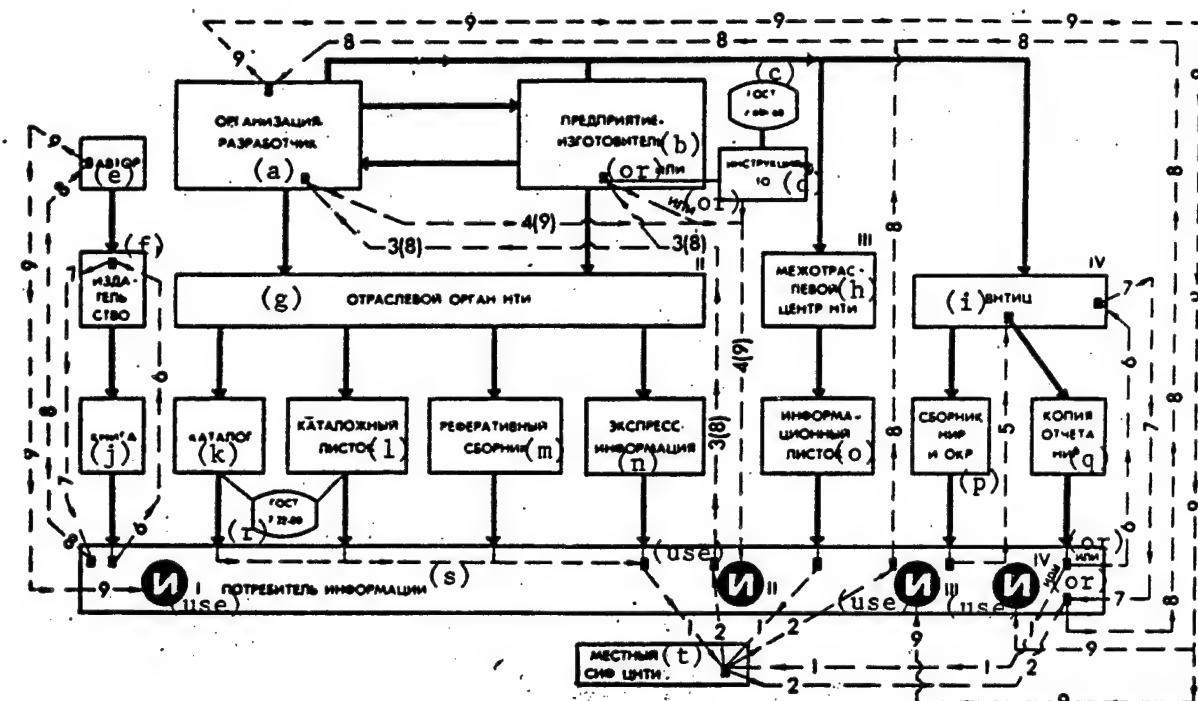
As if a person can know a year ahead of time (and it is precisely within this period that the suppliers are obliged to put in the request), before the drawing paper has been pinned on the board and work on the design begun, that the future purchased article will be better than what is known up to that point! The suppliers will not accept the request ahead of time if it states that the article is still only recommended for production.

But, let us assume, you do not "go to extremes" in your selection and use not the latest most innovative purchased article but, let us say, the next to the last one. Here too submerged rocks are lying in wait for you. You have begun to study the article in real earnest, to "draw" it, and -- here is the first sore point -- there is not enough data on it. This shortcoming is common to most informational materials on purchased articles, whether they are catalogues, particular information or catalogue lists, plant passports, or instructions.

Operational documents (passports, technical specifications, and instructions) are not categorized as informational by accident. At times they serve as the only source of the data needed for the work. Therefore, when there is very little information on an article, we are forced to turn to the plant which manufactures it.

But there are, as they say, bunches of omissions and ambiguities in the information publications. Here is a by no means complete list of catalogues of recent years which suffer from flaws: "Vakuumnoye oborudovaniye" [Vacuum Equipment], TsINTIKhimneftemash, 1981; "Elementy i ustroystva pnevmoavtomatiki vysokogo davleniya" [Elements and Units of High Pressure Pneumatic Control], NIIMash, 1978; "Promyshlennaya truboprovodnaya armatura" [Industrial Pipeline Fittings], TsINTIKhimneftemash, 1981; "Datchiki-rele" [Relay-Transmitters], TsNIITEIPriborostroyeniya, 1980; catalogues for hydraulic equipment, pumps, articles of the state system of instruments, and so forth, and so on. Even a sample list of "fresh" catalogue lists which have come out with flaws will also take up a lot of space. We will name a few: "Elektronasosnyye agregaty tipa Sh5 i Sh8" [Sh5 and Sh8 Type Electric Pump Units], "Fekal'nyye nasosy F 125-80-250" [F 125-80-250 Sanitary Pumps] (TsINTIKhimneftemash, series KhM-4, 1981), "Izmeritel'nyy preobrazovatel' 13 DG 11" [The 13 DG 11 Transducer], "Termoregulyator RTP/r" [The RTP/r Temperature Control], "Preobrazovatel' davleniya MME-K" [The MME-K Pressure Converter], "Datchik DG 231" [The DG 231 Gauge] (TsNIITEIPriborostroyeniya, 1981), and so forth.

## Illustration of Essential (solid lines) and Circumstantially Required (dotted lines) Interrelationships on "Information -- User" Channels



## Key

- (a) Developer-Organization;
- (b) Manufacturing Enterprise;
- (c) GOST 2.601-68;
- (d) Instructions, TO [Technical Description];
- (e) Author;
- (f) Publisher;
- (g) Sectorial Scientific-Technical Information Organ;
- (h) Intersectorial Scientific-Technical Information Center;
- (i) All-Union Scientific-Technical Information Center;
- (j) Book;
- (k) Catalogue;
- (l) Catalogue Sheet;
- (m) Reference Collection;
- (n) Express Information;
- (o) Information Sheet;
- (p) Collection of Scientific Research Work and Experimental Design Work;
- (q) Copy of Scientific Research Work Report;
- (r) GOST 7.22-80;
- (s) Information User;
- (t) Local Information Reference Library of Scientific-Technical Information and Propaganda Center;

[Key Continued, Next Page]

[Key Continued]

- (1) Addressed Query;
- (2) Answer with Address;
- (3) Query on Confirmation of Fact of Manufacture;
- (4) Answer to Query 3;
- (5) Query on Transmittal of Report on Scientific Research Work and Experimental Design Work;
- (6) Query on Address of Publication's Author or Organization;
- (7) Answer to Query 6;
- (8) Query on Additional Information on Development, Catalogue, Prospectus;
- (9) Answer to Query 8.

The nature of the omissions is the same everywhere: the absence of dimensions of the connecting elements of the article itself, as well as of the pulse and cable lines for it, flanges and anchor bolts, holes for fasteners, and the correlation of the article's axes with its size; technical specifications are also not given in full.

It is difficult to say what the reason is. Is it that the technical and practical training of employees involved in publishing the catalogue information is inadequate (since they do not notice that the publication lacks the information most needed by the designer)? Is it that author monitoring is poor? Or is the whole point that the person who prepares the information for publishing is not at all accountable -- after all he is insured against both material and moral claims.

At a stretch, summary type advertising publications, for example VDNKh [Exhibition of Achievements of the National Economy of the USSR] and Vneshtorgizdat [State Publishing House of the Ministry of Foreign Trade] brochures, can still "permit themselves" such incompleteness. But can we allow flaws in serious sectorial catalogues, designated by GOST 7.22-80 to serve as the "basic source of information for selecting and ordering industrial articles needed by consumers"?

The designer's drawing goes to plant shops and any mistake in it is fraught with complications and losses. What can you do -- close your eyes to specific informational omissions and discrepancies, and let them adjust it during assembly or installation? Using air hammers, sledges, and cutting torches?

And all this because somewhere the particular size was not given or something other than what was intended was received. You are "lucky" if only the aesthetics are misrepresented; what if the machine's operational and technical-economic indicators are worse? Often the proper article to purchase must be completely rejected simply because there is not enough data, and time pressure compels it.

Filling in sparse catalogue data by corresponding with the manufacturer is a protracted and tiresome business. It is all right if there are people at the enterprise addressed who care about their work and respond quickly. And if the plant documentation is put together in a business-like manner. But frequently the opposite is the case.

At our request to give us the data on the 21ch4nzh regulator which was missing in the catalogue, one of the fittings plants sent us the list of articles for 1982-1983. And when we requested that the mistake be corrected, they were completely silent. The Armkhimmash Scientific Production Association, with whom we corresponded for almost 6 months, sent a technical description and instructions for operation of the M 96076-00T0 hose gate which were exceptionally sloppy and ungrammatical. We counted several dozen mistakes and inaccuracies in them.

From some enterprises you get "neither a response nor a greeting." The Kharkov Control and Measuring Instrument Plant and the Kharkov Gidroprivod Plant seem to have taken vows of silence; the Prompribor Production Association (Orel), the Analytical Instruments Experimental Plant (Gori), the Livgiromash Production Association, the Sumy Nasosenergomash Scientific Production Association, and the Teplokontrol Production Association (Kazan) are reluctant to respond.

It would be good to make State Standard 2.601-68 which establishes the requirements for the content of operational documents more rigorous. It says, for example, that the "text of the operational documents must be illustrated when necessary." But how completely? What should the illustration include? What kind should it be (figure, drawing)? But the solution to these questions must not be farmed out to the performer.

GOST does not regulate the completeness of technical data for all categories of operational documents either. You can object that operational documents are not intended to be used in designing. However, they are in fact used and you must not shut your eyes to this. Visit any design organization and they will show you stacks of binders with instructions, passports, and the like; and they will show them to you as if they were a priceless treasure.

But if catalogues and catalogue sheets become faultless, then why should instructions be "put in order"? There is no contradiction here: after all, complete size and technical data is also needed when installing and operating the article.

By making Gost somewhat stricter and the "program points" of the standard more rigorous, we will receive a three-fold benefit: for designers, installers, and operators. In addition to using them for what they were specifically intended, operational documents will be of exceptional help in the matter of technical information.

But let us return to informational materials proper.

#### What Is More Important?

The multiplicity of single topic publications does not compensate for the incompleteness and outdatedness of information. On the contrary, the great number of them engenders difficulties.

For example, there are three reference items on pipeline fittings today. The best one -- with illustrations, technical features, and descriptions of the articles -- is the multivolume "Industrial Pipeline Fittings" catalogue (commonly called the TsKBA [Central Design Office of Fittings] catalogue), published by TsINTIKhimneftemash. But it is used reluctantly, since it does not conform to the actual state of affairs. Certain parts of it are reissued once every 5-6 years. "Reference List of Incorporated and Series-Produced Articles of Fittings Manufacture" is issued every year under the aegis of the same TsINTIKhimneftemash. And although we do not receive it until the middle of the year for which it is designed and the information included in it is very limited (the name, type-size, weight, dimensions of the article, its price, and the manufacturing plant), it is nevertheless more reliable. After all, it is an annual! But it does not suit supply workers.

The only document which they respect is "Journal of Requirements" for the corresponding year. It consists of six sections and is otherwise known as "Draft Plan of Material-Technical Supply," and commonly called the "request journal." The publisher is "Soyuzgavarmatura" of the USSR State Committee for Material and Technical Supply. Unlike the first two documents, this journal is available only to employees of supply services, since its distribution is through the territorial UMTS [administrations of materials and equipment supply] lines.

This is perhaps the most conservative of all three documents. For the most part it includes what was incorporated long ago and has been manufactured for years. In addition, the journal follows rigid rules. In the first place, the product description given in it must be followed and changes or corrections in the technical data must not be included. Secondly, requests presented in violation of the system prescribed in it will not be considered. And finally, fittings which are not included in it are considered nonstandard, and in order to obtain them, one must have a protocol of consent from TsKBA [Central Design Office of Fittings] (however, GOST 2.117-71, which defines the consent procedures for purchased articles, does not envision this case).

The "Journal of Requirements" is the equivalent of a prayer-book for suppliers. They talk about it that way. If the article used by the designer is not in the "Journal" (and if the article is a new one gleaned from operational information, it surely will not be there), it cannot be ordered. It is a vicious circle: the designer is in no position to use the new one because it has not passed through the "Journal," because the enterprise producing it has not yet developed its production, because the article is at present little used...

But the difference between a new article and an old one is often fundamental, even if operational indicators are not taken into account and only weight data is compared. A new valve with a plastic body which we once used weighed 450 grams. But since it was not carried in the "Journal," a substitute was suggested to us -- an obsolete design which weighed almost 30 times more than the plastic model.

The three documents (catalogues, request journals, and reference lists) do not only exist for pipeline fittings. There are ones on hydraulic, pneumatic, and

lubricating equipment and on pumps and other types of purchased articles. And not so very long ago Soyuzglavobshchemash issued yet a fourth one for lubricating and filtering equipment -- the Reference Encoder.

Which of these numerous documents is the main and reliable one for everyone -- designers, planners, supply workers? As was already noted, catalogues quickly become outdated and may not "tally." And of those which are published annually, which is the main one? And how can their content be coordinated among the different publications?

It is clear that there should be no ambiguities in them. As far as the "Journal" is concerned, it must have the following instructions. When sending a request to UMTS, the employees of "primary" (for example plant) commercial services have the right to add new, promising articles to it. Only the authorization of the manufacturing plant or operational information of the head informational institute of the sector on this plant is needed to do this. The rayon UMTS is obliged to accept such requests.

But it is best of all, in our opinion, to create a kind of composite -- a single information and ordering bulletin for each sector with illustrations, drawings, graphs, and other comprehensive data on articles and their producers. (We sometimes encounter examples of such publications, unfortunately foreign, at international exhibitions). Let it be unprepossessing: on plain paper, without a hard cover, and with small, compact type -- in complete accordance with its brief useful life. But on the other hand this bulletin will possess the main virtue -- reliability. Another solution may also be proposed: the bulletin is published about 3-4 times a year and is centrally supplied with additions and changes each year (as is done, for example, in regard to GOST's and certain reference lists).

Possibly the quality of informational publications could be improved and their effectiveness raised by the establishment of a single all-Union publishing house -- Informizdat -- which would include appropriate sectorial sections. A general form, acceptable to all users, a uniform style, an interested engineering approach to content which insures the completeness of data and efficiency -- these could be the bases of activity of Informizdat. It would be the one to watch to make sure that each type of output, including, for example, lubricating materials, be covered by information.

Information on this output is wretched, in particular on new, promising types of oil and grease which are produced according to technical specifications after incorporation but before the introduction of a standard.

We find out about new lubricating materials from random sources. We look in at VDNKh and visit industrial exhibits when we are in Moscow. If an opportunity appears, we try to get prospectuses at petroleum oil plants. Some enterprises of the petroleum processing industry respond -- although dryly (the name, sometimes the designation, and cost) -- to our written requests.

The only centralized informational publication in this sector, the catalogue sheets of TsNIITENeftekhim, came out a few years ago. Now, apparently, their publication has ceased.

Because of the lack of information on "present-day" lubricating materials other organizations are also in distress. It is no accident that no sooner had we developed guidelines (based on excerpts from a scarce reference and other information gathered in crumbs) than a stream of requests from across the entire country -- from Norilsk to Krivoy Rog -- poured into the plant. But these guidelines are also already becoming outdated.

Systematized information on technological lubricants used, to be specific, in pouring and rolling metal is hardly published at all. As is evident, the field of activity here is considerable and it must be sown as soon as possible.

#### Please Give Us the Address

"Specify the address of the institute. . . ." A letter we had sent to the All-Union Scientific Research and Design-Technological Institute of the Aluminum, Magnesium, and Electrode Industry (VAMI) traveled to Moscow and was returned with the above note.

This happened a few years ago. None of our associates knew the exact address of the institute. Nor was it in the TsNTI [scientific-technical information and propaganda center] information reference library. But the information which we wanted to obtain from this organization was of much interest to us. The subject was the filtration of liquid through porous rolled metal -- many people, including us, were studying these questions in connection with work on lubricating materials.

We found out that experiments were being conducted on this type of filtration unit in VAMI from the journal KHIMICHESKOYE MASHINOSTROYENIYE. In presenting the essence of the experiments, the authors of the article (and the journal editors with them) failed to think of one small thing: including the address of the "perpetrator of the triumph" in a footnote or at the end of the material.

In addition to information on finished purchased articles and materials, a multitude of various scientific-technical reference sheets, information bulletins, collections, and other publications are regularly published in our country. Reports on new developments and processes, experiments on various devices, and so forth can be found in them. Information of a similar nature is also published in sectorial scientific-technical journals. But it is a pity that you will not find the address of that organization which is the topic of the article or annotation in one of these publications except, perhaps, the journal IZOBRETATEL' I RATSIONALIZATOR. You are lucky if you or the local reference services know the institute or plant mentioned services from correspondence. But if not? Then a letter has to be sent to "the village, to grandfather."

At least a month is spent waiting for a reply, as in the case with purchased articles; in other words, there is no need to speak of prompt use of others' know-how, "hot on the tracks," so to speak. And upon receiving the address, you must also write the addressee and then wait for the reply.

Thus it happens that printed information intended for rapid dissemination nearly always misses the target. And the reason itself is quite simple -- the lack of addresses. But after all, what is published is by no means always adequate to begin to use innovations: there is not enough of some data; additional questions have arisen; and finally documentation was required. And what if a complete list of enterprises and organizations mentioned were given in all sectorial journals, reference publications, express-information, and so forth with addresses, telephone numbers, and last names of their managers? It would not take up much space and the benefit would be enormous.

Incidentally, one of the sides of the covers of a number of brochures published by Izdatel'stvo standartov (for example, GOST 16770-71 "Vats for Hydraulic and Lubricating Systems," GOST 9929-77 "Shell and Tube Steel Heat Exchange Equipment" and others) is allotted for a list of organizations and last names of officials who participated in the development of the document.

NIIMash [Scientific Research Institute of Information on Machine Building] also has shown good initiative in "eliminating impersonality." All "involved" manufacturing plants are listed and their full mailing addresses are cited in NIIMash's descriptive reference book "Hydraulic, Pneumatic, and Lubricating Equipment and Filtration Units Produced by Ministry of Machine Tool and Tool Building Industry Enterprises in 1982-1983" (developer -- VNIIIGidroprivod [possibly All-Union Scientific Research Institute of Hydraulic Drive]). For a number of reference collections TsNIITEIPriborostroeniya [Central Scientific Research Institute of Information and Technical-Economic Research on Instrument Making for Automation Means and Control Systems] and TsBNTI [Central Office of Scientific and Technical Information] of the Ministry of Installation and Special Construction Work have begun to cite addresses of those who have information.

It would be good to have data on organizations mentioned in the text and, of course, on the authors. At the same time this will increase their accountability for the printed word and force the information they use to be verified. It is no secret that some of this information is not subsequently confirmed or proves to be nothing like it was described -- many examples on this subject can be cited. Here is one of them: a year ago the Kazan Templokontrol' Production Association informed us that series production of the relay selector panel of the relay channel had not been incorporated and was not envisioned by the production plan, although there had been several reports on the production of the instrument.

In our opinion, it is advisable to create and publish a composite manual of all industrial and scientific research organizations with their addresses, work specialization -- for a scientific research institute, and list of output produced -- for enterprises -- specified so that they would be available to the technical information services of every plant and every planning and research organization for official use. Here you can also allude to the example of the list once centrally published of scientific research institutes, organizations, and enterprises which were base ones in the field of standardization.

Undoubtedly, the work proposed is extensive and labor-intensive and requires a lot of time. But providing periodical publications, information sheets, and so forth with detailed addresses, it seems, would not be a great deal of trouble, even today.

#### What Do You Call A Heavy Oil Station Now?

The ZEG, RDE, Z-2... Three different designations. But they all mean one and the same electrohydraulic valve. Our industry has been producing it with small changes for dozens of years. But its designation has been changed twice recently.

Heavy oil stations. Specialists remember their first domestic designation -- SAG (automated heavy oil station) -- with the addition of a productivity indicator and in practice, at conferences and in technical literature, this name is still used. In the 1960's the designations SK (final station) and SP (loop station) appeared, in the 1970's -- 0600-2-2-1 and 0600-1-1-1, respectively, and finally, today the name "double-line lubricating station" with the designations 0600-2 and 0600-1 has been established. (Incidentally, even the lubricant itself which they inject and which had been a lubricating grease has been "converted" for no apparent reason into a plastic lubricant, while the system of heavy oil in accordance with GOST 20765-75 has acquired the bombastic name "lubricating systems with plastic lubricating material").

A passion for changing designations is simply gripping the producers of lubricating, hydraulic, and pneumatic equipment and filtration units. They say that this is related for the most part to the introduction of new GOST's and technical specifications. But is it necessary when standardizing an article or changing technical specifications that they always alter its designation? They also say that when it acquires a new designation a slightly altered article becomes "new technology" with all the consequences which stem from that, that is to say advantages.

Sometimes the name of a device or apparatus is also affected and one or two words which identify it are replaced with a tautological throng of highly fanciful words. For example, some time ago a widely known lubricator began to be called a multipiston lubricating pump (in accordance with GOST 3564-58), and then a piston multidischarge pump for light oil (GOST 3564-72). Its designation was also altered several times. For example, a rocker pump with an 8-toothed ratchet gear was first recorded as N4-8r/100KKhP. Moreover, it had a designation which took into account the location of the gear (left, right) in accordance with GOST 3564-58: K-PR-8 (K-LV-8). The notation was later changed to SN-5K 8-025/100. And finally, in accordance with GOST 3564-72 its designation began to be represented by a terse, telephone-like combination (21-08).

At one time a specialist could guess the nature of an article from its abbreviation and decode it (is this really bad from the standpoint of informativeness?). Today that is almost impossible. Liquid flow indicators 30 years ago, for example, were abbreviated UTZh [liquid flow indicators], and then more abstractly -- BMT and BF. Now, in accordance with GOST 9684-75, they have only the size of the standard orifice in the designation.

Guided vane pumps. Until recently their designation was, for example, G-12-31AM, and suddenly for no reason it became a number: 8. Safety valves were the same: MKP-12 and 10-100-1-11. And a uniform approach to assigning numerical designations and a uniform style, as if it were in some order (let us say, in connection with introducing machine accounting) are in no way followed. Thus, if pumps began to be designated only by work volume (8, 12, 16 cubic centimeters), then the designation of a valve would now include indicators of the standard orifice, working pressure, and throughput. But these parameters, "unaccounted for" in its designation, are also of great significance in describing the pump.

As a result, not only employees in the sphere of material-technical supply, but also the designers themselves who issue orders to them for the purchased article become confused by these numerical idiosyncrasies. They hardly get used to the name and designation and feel comfortable with it when -- lo and behold -- it has been changed. In order to extricate themselves from the difficulty, designers devise different conversion tables, make up catch-phrases, and so forth. Numerical designations which have inundated catalogues and reference lists, unlike letter designations, are difficult to remember. It is difficult to explain all this by the introduction of a uniform system of keeping track of output, since in addition to the "pure" designation there is also an output code based on the OKP [all-Union output classifier] to which the numbers which make up the designation are not related.

Even triple variants of designations have emerged for some articles and such complicated ones that special decoding is needed. Thus, about 20 pages of the recently published book, "Stanochnyye gidroprivody" [Hydraulic Machine Tool Drives], were devoted to this type of discussion.

Recently, the wave of new designations also seized, unfortunately, such a once tranquil division of industrial output as pipeline fittings. For a long time there was a stable system in this industry which relied on a system of special figure charts which identified standard designations of fittings. They took shape from the collection of figures and letters which took into account the design features of the article. The designer who used the fitting and the supply worker and operator could always understand what it was (a valve, gate valve, cock), how to start it, what the body and the gasket were made of, and so forth. Today fittings have begun to receive designations in accordance with the number of the drawing of the article. This has created much confusion in orders and was imposed on the mutual relations between designers and supply services. For example, a parallel-seat gate valve with manual drive was for years produced under the designation 30ch6br. Now, depending on which enterprise produced it, that same design can be designated GL 16003 and E 1438 and 140.00.00.00.

Is it not time to put an end to these innumerable name changes? After all, the next thing you know this plague will spread to the remaining, still safe sectors (instrument building, for example). Each standard has a limited term of operation, and when it is reexamined, the temptation can always appear to dress it up with a new designation.

Unfortunately, this is not a small thing. The rational organization of the labor of designers and the economic side of their activity are mutually tied up in this situation. Under a stable system of designations, expenditures of time are minimal for searching for informational materials, selecting designs, and finally, working with specifications and lists of purchased articles (in which, in addition to the new designation, the new one must be put in parentheses during a "period of adjustment"). There are fewer mistakes and conflicts with supply workers -- fewer reconciliations, exchanges, and alterations.

How can this inclination toward unjustified changes be overcome in their initiators? Perhaps introduce mandatory registration of names and designations of articles in the State Register, as is done, for example, with commodity labels and models? This procedure could be combined with the "Act of Accepting Experimental Models (Experimental Lot)" envisioned by the GOST entitled "The System of Developing and Putting Output into Production." Furthermore, definite rules for changing designations registered earlier can be established, that is, put a barrier (let it be a bureaucratic one, but nonetheless a barrier) on a high level. If the organization -- the creator of the article -- does not prove the need to throw out the designation, refuse it. And in addition make it so that the registration is paid for by the applicant, especially for changing a designation (introduce a kind of tax), despite the result of the decision on the application. Is it possible that then the onslaught of lovers of name changes will be stopped?

And if the need arises to introduce new designations, let us say, when fundamentally reworking designs or creating a fundamentally new article, it is worth adding an intelligent, graphic system. And there is no need to find or invent such a system again. It exists. For example, in household appliances: electric articles, radio-television devices, photographic goods and their components. Almost all of them contain a base designation plus indicators of basic parameters and modifications as well. The "Samoletik" [small plane] IL-14 and the giant IL-86 have the same base designation -- IL, while the figures only elaborate and identify the design, and relate them to a time period. And would it really work poorly if, for example, the designation were SAG with the addition of the year of modification: SAG-49, SAG-60, 70 from now on? It would be immediately clear "how old" a particular station was and what could still be expected from it.

In a word, a terse, "open" (and not veiled) designation of an article is better. It is also an important piece of scientific-technical information, and order is also needed here.

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## PARTS RENOVATION SYSTEM DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 115-123

[Article by S. L. Averbukh, candidate of technical sciences, N. P. Kononenko, candidate of economic sciences, Ukrainian Scientific Research Institute of the Economics and Organization of Agriculture imeni A.G. Shlikter: "The Paradoxes of Renovated Parts"]

[Text] The Food Program proposes to increase the quality of machine repair and expand the practice of renovating wornout parts. The renovation of wornout parts by Goskomsel'khoztekhnika enterprises increases every year: from 17.6 million rubles in 1962 to 478 million rubles in 1983. Furthermore, kolkhozes and sovkhozes are renovating 130 million rubles worth every year.

Even against the background of mass use of new spare parts by agriculture -- 2.0-2.5 billion rubles worth per year -- the renovation of parts seems a weighty increase which, nonetheless, is almost not felt. The reduction in the prime cost of repairing machines is insignificant, although the calculated savings from renovating parts exceeded 190 million rubles in 1983, according to official data.

If the effect is distributed among tractors, engines, and combines repaired in 1982, it comes to an average of 170 rubles per unit. But in reality, an increase in the prime cost of repairing machines is observed. Thus, UkrSSR Goskomsel'khoztekhnika repair enterprises expanded work on renovating parts five-fold in the last 10 years; nonetheless, prime cost not only did not decrease but rose by 20 percent. The repair of T-74 tractors is 100 rubles above the limit in the Belotserkovsky workshop (Kiev Oblast) and in the Shargorod workshop (Vinnitsa Oblast). The limit is also exceeded in repairing grain and beet combines.

Where are the roots of the paradox?

Let us begin with tempo. The dynamics of the "gross" figure for renovation of wornout parts in the national economy is characterized by a 10-15 percent increase per year. The volume of work in the 10th Five-Year Plan doubled. It is simple to explain the surge of activity: the renovation of parts by Goskomsel'khoztekhnika repair enterprises is planned "from what has been

achieved." It is easy to fulfill and even overfulfill this plan. The point is that any part is considered renovated if any defect, even a minute one, is eliminated. All that has to be done is to turn the part in to the warehouse and then order it back for a machine under repair. Inasmuch as in repairing tractors and agricultural machinery a large part of the parts undergo minor repair, every enterprise has opportunities to increase the "gross." The procedure of "turning it in to the warehouse and receiving it back from the warehouse" is arbitrary. An "order for work" where the renovated parts and the size of the lot are enumerated is filled out for a part or a group of parts. Then the release price is calculated by "adding on" 140-160 percent for various kinds of supplements to the basic wage. Then the part is written off against the machine being repaired. Ending up on the defective list, the renovated part in some cases grows more "additions": 8 percent -- the accepted price increase for spare parts and materials; 1.5-5.5 percent for nonproduction expenses; and up to 5 percent for savings. The part participates twice in the indicator of wholesale output and in this way forms enterprise profit twice.

It must be noted that not all parts being repaired go through this system, and not everywhere. There are many enterprises where centralized renovation of parts has been organized as commodity output. A special shop of the Zhmerinskiy Raysel'khoztekhnika in Vinnitsa Oblast, for example, renovates the suspension roller of the T-74 tractor by pouring liquid metal over the worn part of the rim. The price of a new roller is 7.9 rubles and of a renovated one -- 3.8 rubles. There is a savings of 10 kilograms of metal on each roller (a new one weighs 15.2 kilograms). The production program is 60,000 rollers per year. Nonetheless, in 1983 commodity output did not exceed 18 percent of the total volume of parts renovated by Goskomsel'khoztekhnika enterprises; its rate of increase is limited to 1-2 percent per year. This fact unequivocally confirms that the phenomenal increase in renovation of parts results mainly from faulty accounting.

Cases are frequent when a shortage of parts makes it urgently necessary to organize their renovation "at any price." This occurred with step 19.05 chains, heads for the D-40 engine block, conveyor blades, and caterpillar links. At the same time industry quickly increased the production of formerly scarce parts, and items worth tens of thousands of rubles which could not be sold accumulated at trade bases and in workshop warehouses. The cause of such occurrences is the lack of direct ties among enterprises which renovate parts and enterprises which produce new spare parts.

A part is usually concealed deep in assemblies and units of the machine. Getting it from there and replacing it with a renovated or new part is often many times more expensive than the part itself. That is one of the reasons mechanics are against installing parts of doubtful reliability in a machine. As a survey of mechanics in kolkhozes showed, they prefer a new part to a renovated one, even if the renovated one is cheaper. They agree to the latter as a last resort if fieldwork is imminent and nothing better is foreseen.

Where repair is done without mechanics, work goes badly. Although the repairmen are accountable for the service life of the machine and give a guarantee, all this becomes insignificant when the plan "is hot." They put

whatever they have into the machine. As a result, the reliability of tractors repaired in Goskomsel'khoztekhnika workshops is many times less than that of new machines.

Mechanics' distrust of renovated parts is completely substantiated. There is a category of defects whose elimination in universal equipment is generally impossible (splined joints, gear teeth). Allowances for processing, let us say, of a splined pair are just so rigorous that if the end of the splined shaft is held in one's hands, it is difficult (because of the temperature expansion) to assemble the mate. And meanwhile 70 percent of the work on renovating parts is performed according to the following plan: manual arc welding surfacing, then mechanical processing without thermal and finishing operations.

And how do matters stand at the individual enterprise?

Let us take a large part renovation plant. Its basic indicators are: projected capacity -- 6 million rubles per year; production areas -- 16,000 square meters; active part of fixed capital -- 7.1 million rubles. The plant is equipped with 8 mechanized flow lines for renovating parts of 18 designations of engines. In 1983 the plant produced 4.6 million rubles worth of output. Of that only 2 million rubles worth of wornout parts were renovated. The rest was the manufacture of new spare parts and "other work." It is not surprising that in 1983 the plan for renovating new parts was 67.9 percent fulfilled. All parts being renovated, except two, are unprofitable. The material well-being of the plant is maintained exclusively through the "other work." A comparison of the expenditure norms for new and renovated parts in most cases is not in favor of the renovation. For example, a new GAS-51 cylinder block cost 16.0 rubles, and a renovated one -- 32 rubles; figures for a GAZ-51 crankshaft were 4.2 and 13.2 rubles, respectively. Production encounters difficulties in insuring output quality.

The point is that in renovation, a part which was formerly in use serves as a semi-finished part whose worn surfaces must be built up and processed to standard sizes. To do this the same equipment and specialists of the same skill are needed as at the manufacturing plant. Plus special equipment for building up wornout parts: surfacing, electroplating, and polymer equipment. A widely developed, smoothly operating branch service for assembly, storage, trouble shooting, and transport of the repair fund is needed.

It is difficult to satisfy all the "needs" of the repairmen. Thus, the plant does not have enough specialists in adjusting complex equipment. As a result, the line to renovate valves is not incorporated at all, while the line to renovate U-shaped cylinder blocks is not used in a flow line system. Outside specialists have to be invited in to fix precision equipment. Series production equipment incorporated into mechanized flow lines does not coincide in productivity with the line's calculated rhythm, and therefore shifts stand idle for a substantial amount of the time. Repair fund receipts not only do not support the projected budget program but not even the planned one, which is almost half as much. Expansion of the assembly zone for the repair fund involves additional transport expenditures and organizational difficulties.

The state of affairs at the repair plant we are describing forces one to consider: is the renovation of parts being developed in the right direction?

Let us turn to the economic side of the work. We will begin with an exaggerated, but essentially valid analogy. Suppose some enterprise decided to make nails out of discarded rails. You will say that is expensive and energy consuming. Yes, but the rails are free and nails are expensive (this is an analogy). The price for nails has been set many times higher than actual expenditures. Electricity is cheap. Using simple calculations an experienced economist will prove that making nails from rails is profitable. He will refer in particular to the excessive prices of tractor, motor vehicle, and agricultural machinery parts.

To calculate the economic effect of renovating parts the price of the new part is taken as the criterion-indicator while the wornout part is evaluated as metal -- consider it free. But in the GDR, for example, the purchase price of a wornout part is between 25-60 percent of the price of a new one. The release price assumes a reduced use value for the renovated part of 10-20 percent. This form of calculation, in the first place, limits unjustified profits from excessive prices of new parts. Secondly, the interests of those who receive the renovated parts are not infringed upon. Thirdly, the use of expensive and inefficient technological processes is restricted.

In the price of the new part, the labor intensiveness of manufacture in money amounts to 1-20 percent, while 100 percent of its value remains at the disposal of the repair enterprise. As a result, the labor intensiveness of renovation will be 5-10 times greater than plant labor intensiveness in 80 percent of the cases. Because of the one-sided evaluation of efficiency and imperfect accounting, Goskomsel'khoztekhnika repair enterprises receive 31 kopecks of profit per ruble of expenditure in renovating parts!

In weighing the renovation and manufacture of parts on the economic scales, the characteristics of the production facilities being compared should be systematically taken into account. According to Professor Yu. A. Konkin's data, a ton of scrap metal, remelted, is equivalent to the production of a ton of pig iron and the extraction of 2 tons of iron ore and the consumption of 1.33 tons of coking coal.

As anticipated, the volume of work on renovating parts will reach 1 billion rubles by 1990, and the savings will total 250 million rubles and 3.1 million tons of metal. One must consider: should we recruit tens of thousands of people to renovate parts in accordance with the extensive plan or find ways for intensive development with the use of progressive domestic and foreign know-how? And this know-how does exist.

The Vilnius Fuel Equipment for Tractors and Combines Plant organized a section to repair their articles. The section demonstrated high efficiency. By request of the plant, the Sel'khoztekhnika workshop in the village of Dukshas was turned over to it. They outfitted the workshop with equipment and trained the employees. In increasing production capacities, a new building was constructed and two flow lines were installed. Fuel pumps are now repaired

not only for farms in their rayon and republic, but beyond their borders as well. Seventy percent of the parts repaired are precision parts, and labor intensiveness has been reduced by 20 percent. The quality of the repair is guaranteed on the same level as for new articles.

In order to disseminate the plant's experience, UkrSSR Goskomsel'khoztekhnika offered to give it the Nemirov Shop (Vinnitsa Oblast) For Repairing Fuel Pumps, obliging the plant to convert to a guaranteed supply of fuel pumps for the republic's machine-tractor fleet within 1-2 years. Although, in addition to other benefits, this would have permitted 10 shops with primitive technology to be closed, the proposal was not accepted.

The Vilnius plant continues to expand the zone of company service. Today 5 branches which renovate 100,000 fuel pumps a year and a large number of injectors and sprayers are in operation. Exchange centers of the plant have been set up in five Union republics.

Now about foreign experience. In Kiev, the international "Remdetal'-83" [Parts Repair-83] conference took place. Reports dealt with experience in the organization and technology of parts renovation. The report by Szabo Karoy of Hungary drew substantial interest. "As a result of introducing a new system of managing the national economy, plus changes in various economic conditions, specialized repair enterprises have gradually renounced repair work and have converted for the most part to producing new agricultural machines. At the present time there is not one repair plant. Agricultural enterprises have gradually taken on repair work themselves, developing their own technological base, which in part is not even financed by the state. They are being built with their own capital" (quoted from the published theses). And further: "In this way, the renovation of parts has no tradition." Nonetheless, Szabo Karoy noted that the 28-30 percent increase in prices for spare parts in 1982 forced them to take up renovating wornout parts. He believes that renovation can reach 12-14 percent of the supply of new spare parts in the future. This ratio is being increased to 30-35 percent in Goskomsel'khoztekhnika.

A few words on the renovation of parts in developed capitalist countries. The need for spare parts, including renovated ones, depends mainly on the quality of new machines and the intensity of their operation. And this, in turn, is determined by the available stock of machines. The high quality of machines and technical service and a prudent attitude toward equipment are the basic reasons for the low demand for spare parts. Therefore, there is no enterprise activity in the renovation field. Judging from publications, repair workshops and plants, which in most cases are subsidiary enterprises of producer-firms, only renovate parts for their own needs. In order to interest clients in the firm's services, prices for repaired assemblies and machine units are reduced, with guarantees of quality.

In the FRG, producer-firms engage in the renovation of crankshafts of tractor and motor vehicle engines under the same system by which renovation of bearings and rubber is organized in our country. In Scandinavian countries small independent entrepreneurs renovate certain parts and assemblies for imported equipment and sell them at a price which is 20-30 percent lower than the price of new ones. The point is that the delivery of new spare parts from

the United States and Japan and various kinds of duties significantly increase the price of new parts.

The seminar "The Management of Scientific-Technical Progress at USSR Goskomsel'khoztekhnika Enterprises," conducted at the All-Union Scientific Research Institute of Renovation of Wornout Parts proposed the following concept of development of the sector. The renovation of wornout parts is one of the methods of supplying agriculture with spare parts. The preconditions for accelerated integration of industrial and repair production must be created. Their interaction is organized on the principle of communicating vessels where spare parts are supplied through coordinated production facilities. The interests of the consumer serve as the only criterion of the increased production of new spare parts and expanded renovation. This criterion will eliminate unsubstantiated inflation of production facilities in the monetary sense, stimulate reduced prime cost and release prices, and encourage contemporary marketing. Accounts for wornout parts accepted for renovation will be economically substantiated.

The goal of the activity of the integrated system of service and renovation is to fully and promptly provide agricultural equipment with spare parts. Integration minimizes total expenditures, above all for the consumer, and at the same time maintains the high quality and reliability of machines and equipment.

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## TRIBUTE TO I. S. RYZHKOV, HYDRO POWER PLANT DUTY OPERATOR

Novosibirsk EKONIMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 125-134

[Article by K. F. Kostin, deputy chief designer of the design bureau, Uralelektrotyazhmas Plant, Sverdlovsk: "Ivan Savel'yevich, Doctor of Machines"]

[Text] Experience is important in any occupation. If you do not have much, theoretical knowledge will not rescue you. Ivan Savel'yevich Ryzhkov not only has experience as duty operator at a hydroelectric plant. He also worked as an installer of hydraulic generators but after some years changed from this migratory occupation. At times a settled life oppressed him; he missed and recalled the earlier years when he traveled around to the largest hydroelectric power plants.

"That was real work," he used to say. "Twenty railroad cars of parts and assemblies of equipment would be herded into the construction site, and in 5 months, lo and behold, what an enormous thing would be assembled from them -- weighing over 1,000 tons and about 20 meters in diameter!"

Ivan Savel'yevich treated a machine as if it were a living creature and talked to it as if it understood and obeyed him and -- most important -- never objected. Since he was sick off and on in recent years, Ivan Savel'yevich heard a lot of medical terminology and he translates the malfunctions in electrical machines in his own fashion, as if they could be ill.

"What kind of a machine is number 3 or number 5? That is an insult to its dignity. After all, this is no boot size or hat size! Even a dog has a name. A hydraulic turbogenerator unit is a diligent workman or workwoman."

He addressed some units in the masculine gender for their tough character and ability to endure considerable exertion and their deep voice during work, and others in the feminine gender for a certain irritability, their high tone sound, and caprices under strain. So Ivan Savel'yevich named every unit in his own fashion: "Il'ya Muromets," "Pugachev," "Ivan Groznyy," "Sekretarsha directora," and "Mashen'ka," although all the machines at the station were outwardly the same and made according to the same design at the same plant.

Before my first meeting with the best machine operator, the director of the hydro power plant warned me that the old man was direct, sometimes abrupt, sharp-tongued, and if he was in a bad mood was not overly fond, as he said, of "scientists." And he classified designers of machines, the collective which I represented at the plant, as "scientists."

When I walked together with the duty engineer up to the first unit and bent over to examine the revolving slip rings carefully, I suddenly heard a cheerful voice behind me.

"You, comrade, look like a scientist; perhaps you are even preparing to be a doctor of sciences. But you look into the interior of the machine without taking off your hat. The wind will snatch off your hat and blow it into the machine. The hat isn't worth a penny, but we will have a emergency situation. Because of that we won't get the bonus for no emergencies."

The remark was accurate and I looked around at the person who had spoken. The first thing that struck me was Ivan Savel'yevich's reddish mustache streaked with gray; but the mustache was not twisted as it had been in the photograph I had seen on the Honor Board. It drooped. Later I was told that was a sign that Ivan Savel'yevich was in a bad mood. "The barometer has fallen; expect a sharp wind and overcast conditions--he is in low spirits." An old cap with a stiffly lacquered peak sat neatly on his reddish head. His overalls were not sewn according to the standard, but apparently according to the owner's special order: there were several pockets of different shapes on the chest and they were all buttoned with small buttons. As I later learned, he kept a test prod attached to a small cord with a knot in one narrow long pocket. In another similar little pocket he kept a folding rule, and in a third one, a little larger in size, a flashlight and a notebook, while the right side pocket was superimposed and made of oilcloth. There Ivan Savel'yevich kept a piece of material which he used to wipe oil spots and dust from the machines and wipe his hands. The whole group of buttoned little pockets guaranteed that nothing would fall into the machines when the owner was bent over. On the chest of the neat grayish shirt, as I later managed to see, six different colored plates were neatly sewn on -- awards for an honorable life of labor.

Ivan Savel'yevich appeared to be about 70 years old. Small, dry, slightly stooped. His grey animated eyes looked out keenly and youthfully from under tangled beetling brows. I even thought: did I make a mistake in taking him for an old man?

I very much wanted to have a heart-to-heart talk with him, to take stock of his remarks and complaints about the hydraulic generators, but our initial meeting did not dispose him to casual conversation, and I decided to talk with him some other time.

Accompanied now by Ivan Savel'yevich we "listened" and looked at the next unit. I drew attention to a strange sound like the chirring of a grasshopper, and thought that the molding of the magneto drive of the stator made of thin electrical sheet steel had come lose. And I asked what the reason for such an unusual sound was, not expecting Ivan Savel'yevich to answer. The old man looked at me more amicably and, apparently appreciating my vigilance, said with a typical Volga accent:

"Yes, comrade engineer, and perhaps scientist, the molding in the core of the stator has come lose and when it starts shaking it rattles. I think that they were in a hurry at the plant and did a bad job of pressurizing it, but the design does not lend itself to supplementary molding while it is in operation. The thin steel sheets of the toothed part rattle, and if it is not eliminated, they will begin to break and fly off into the interior of the machine. Such cases occurred at the Rionskiy hydroelectric power plant back in 1932. But then it was easier to remedy. Designers thought more about consequences."

"And you treated this illness?" I asked Ivan Savel'yevich, somewhat offended: after all it is easier to criticize than to do something.

"I had to. We know a little about internal illnesses and about surgery. We treat plant diseases fairly often. A machine cannot talk the way we do, and it does not complain. Its language is like a foreign language and not just anyone understands it. And because of this it is more difficult to treat than a person. A person goes to the doctor: he says, help me, I have colic in my stomach, especially when I drink a lot. Or he complains about his heart: he says, I used to smoke two packages of cigarettes a day, but now I can't even cope with one. And then the doctor sends him off to the health resort for something he got himself into."

So, despite my expectation and first impression, I had already managed to talk with Ivan Savel'yevich near the second machine. It is difficult to talk about what happens with machines any more precisely than he does.

"We don't give them days off; all we say is, give us kilowatts and we don't want to know anything more. So she, the sweetheart, works until she passes out. Then they begin to organize the diagnosis and look for the causes of the disease in the machine operator rather than the machine: they say she got sick with sorrow from being treated carelessly. I read in the newspaper recently that a 10-percent reserve above the needs for electricity must be created. I read that part three times and cut it out. When this reserve exists we will be able to stop 1 out of 10 machines and bring all the preventive measures on the machine up to date and not wait for it to lose consciousness.

"After all, the 'parents' -- designers, production engineers, and plant workers -- sometimes put a heightened sensitivity into the machine. They skimp on putting copper in the machine -- her temperature rises. They scour the thrust bearing badly -- a temperature again. Poor ventilation -- the same. The clearances in the guide bearings are increased -- she, the dear, begins to feel feverish and shakes as if a malaria mosquito bit her. The manifold gets clogged up and sparks fly from it. And sometimes it's like a heart attack -- under high pressure the coils puncture the insulation.

"Sometimes some of them are obstinate by nature. If they're rubbed the wrong way just a bit, they begin to tremble and you don't know how to calm them down. Well, the main thing, of course, is attention, observation, and a skillful approach -- then the dear thing is obedient and diligent, and doesn't know how to show its gratitude to you and gives more kilowatts than the passport records.

"In general you have to respect its machine-like dignity. After all, it too has pride and the more reputable the plant which produced it, the greater its dignity."

In parting Ryzhkov said to me, "And as for plant pecadillos, I ask you to consider. Perhaps not everything is evident to you scientists on paper, but here things are more apparent; the pressure test on the stator must be done a bit more seriously and the external appearance handled a little more carefully, and it wouldn't hurt to raise performance quality. And give instructions that the makers of the machines should visit them a little more often. After all, I know how it is at plants: they would just as soon make it, deliver it, load it on the platform -- and forget it. They don't even wave, just show their backs. What can you expect from these machines if their creators themselves turn away and don't like to remember what they did?"

The old worker seemed to know it all beforehand. Although I had argued with him, I could not help but admit to myself that he described the plant environment truthfully. The plan. Rubles. Kilowatts. Reduced prime cost. Labor productivity. And then delivery of the output to the customers, presentation of bills to the bank, and then some sort of break of ties with what we created. But the life of these articles is only beginning. The "parents" throw out their "children" after leading them to the doors of the plant. What becomes of them? Are they successful? Do they need our assistance? It is fine if they end up in the hands of such a practical-engineer of the machine soul as Ivan Savel'yevich, but what if they do not?

And it was as if Ivan Savel'yevich guessed what I was thinking and continued:

"And for this, taking off the fancy trousers, I would like to chew out certain managers, and not only managers of plants. I have seen enough of how equipment is stored until installation is begun. There are hundreds of problems. I was once sent to the Kamskaya hydroelectric power plant to teach young people and pass on experience to future machine operators. That is the right thing to do. Before, when I was still called 'Red,' the experience of old men was like a personal treasure. But now they say: 'Well, Savel'yevich, take out your key and open the lock. Bring out your treasures for the common good.' And so I laid out my know-how for the young people at the Kamskaya plant, and it went so far that the director up and said to me, 'Ivan Savel'yevich, you did not bring the technical minimum of knowledge for our young people, but the technical maximum, and this is useful for the managers too. So we are giving you our heartfelt Kamskaya thanks.'

The construction there was good, and not easy. It was the first time Ryzhkov had seen such a thing: it looked like there was no dam or machine room, but if you looked carefully, they were there. This plant was conceived by Professor Boris Kapitonovich Aleksandrov. This hydroelectric power plant is well-proportioned -- the units are in the organism of the dam itself, and in the spring they pass the flood waters over the concrete roof above the units. And the machine operator is on watch, dry, while above him thousands of cubic meters of water overflow from the top level to the lower one. "No paramedic of science could think of this; it must have been a real doctor."

Ivan Savel'yevich had just rejoiced that the man had a head on his shoulders when he saw the assemblies and parts of the electric machine. They were lying "au naturel"; under the open skies, in boxes and some in broken ones without tarps. Rain poured on them; wind blasted them; and the sun only occasionally caressed them. And what does water mean to the insulation of the coils? A real cold. First the machine sneezes and then it breaks into a sweat, and there, lo and behold, is a heart attack -- the insulation is punctured.

And what is even worse is when the coils are sated with moisture in the fall, and then there is enough frost to begin to tear the insulation. This machine will be fragile for its entire life. When an organism has been straining itself since youth, do not expect strength in old age. The surface film on the coils cracks from the frost. Water soaks up in these cracks. It is just like an oilcloth cape: when it is new water does not penetrate, but then it cracks and you can feel the water dripping down your back. About the same thing happens in an electrical machine.

And what a lot of rust appears from water on steel parts! It is like a rash which erupts from measles or rubella. So Ivan Savel'yevich Ryzhkov walked up and thought: "But, dear one, why have you turned so red? Is it not from shame for your masters who do not know how to take care of you and do not know how to respect the labor of plant workers? And perhaps they also consider and think that while the machine's organism is young and uncorroded, they will work! Then they will transfer the master-installers to another building site and there they do not expect anything. They will hold responsible the new masters and operators, who receive machines whose 'lives have frequently been curtailed' and who suffer with them."

"I have seen the same kind of storage at other construction sites as well," told Ryzhkov, "and the managers there seem intelligent and there are instructions on storage. Everything is written down: which parts and assemblies to keep in dry and warm places, and which in dry places but without heat in winter time, and which can simply be kept in the open air. And these managers give intelligent and smooth speeches -- some from written notes, and some simply off the cuff, but they have no understanding of careful storage of equipment. These comrades also treat machines as if they were dumb little beasts. They know that the machine does not complain either to the minister or to people's control."

An installer from the north, from beyond the Arctic Circle, where a hydro power plant is being built arrived recently. Ivan Savel'yevich tried him out and got annoyed. Up to 2-3 meters of snow falls there, and the boxes with the equipment are also kept under the open sky.

"But how do you find the boxes with the equipment needed under the snow?" asked Ivan Savel'yevich.

"Like in a cemetery, by the monuments. We nail a pole 3-4 meters in length to each box in the fall. There is a tablet on the pole and we write all of the information on the tablet: the number of the box and what is in it. In the winter you go on skis and read 'graveside inscriptions.' You find the box and begin excavations."

In the middle of our conversation the old man suddenly became silent, listened, went up to the third unit, laid his ear against the body of the stator, and listened for a long time. Then he took out his comb, combed his mustache, and walked up to me and said jokingly:

"Do you hear? They have reduced the load. The voice of the generator became different; as if a lightness appeared in it and its breath became freer."

And he remembered how two hydraulic generators were sent to Ryazan Oblast for the Kuzminskiy Rayon hydraulic power plant which stands on the right bank of the Oka River. Right in the homeland of the poet Yesenin. They came by rail to Rybnoye station and there both beauties were undressed, stark naked -- all the packing was peeled off: some for firewood and some for hen-houses. Then they were hooked to tractors and taken to Kuzminskoye. They were towed off for about eight kilometers and for some reason they were thrown into a field. It happened in the fall. Winter came, fierce and snowy, and they still lay there. If they had known how to write, they would have sent a dispatch to Glavsel'elektro [Main Administration of Rural Electrification]: we are lying, they would have said, stark naked, shivering, freezing through and through. Save our youth, ruined for no reason, in the Ryazan land! But they could not write, and apparently a literate writer did not run across them. So they lay there, the darlings, covered with a white downy blanket until spring came. Well, in the spring they were dragged further; the place they were intended for was about another eight kilometers. But when they were installed, it was found that the insulation on the coils had been broken and cut to the flesh, that is, to bare copper, in 46 places, the paint was chipped, and the steel parts had rusted through. The machines were new but their exteriors looked like old women whose husbands did not know how to care for their youth.

Ivan Savel'yevich had also seen exemplary storage of equipment. He had forgotten, it is true, the name of the hydraulic power plant. He went there and saw that the warehouse was dry and clean and heated in the winter, a thermometer hung on the wall, a journal lay on the chair, and in the journal the air temperature and humidity were written down. Four cats were lolling around the warehouse, sleek and slow-moving. The estimate envisioned money to nourish these cats -- 2 rubles per month each.

When I heard about the cats, I smiled, but Ivan Savel'yevich said:

"Do you think that you are being told a fable? Although you are a scientist, it's obvious you don't know about real storage of electric machines. Moreover, let me say that in that journal, I read it myself, was written: 'On 24 November 1952 the state of health of the four cats was inspected and it turned out that everyone's health was fine,' and it was signed by the rayon veterinarian, Petukhov."

Why did they keep the cats? So that the rats and mice did not gnaw through the insulation of the coils; such things happened at DneproGES and other power plants before the war. If the rats and mice get to work on the insulation, it is no joke.

My laughing and unfortunate ignorance of rodents' love for the insulation of the machines upset our continued conversation. Making reference to the machines and discipline, he parted with me rather drily...

I had spent half a century designing electrical machines, but after these conversations I had something to think about. It is true that there was one question which did not inspire him to details: "What did you do, Ivan Savel'yevich, when you saw such a mess?"

"I went to the top boss of the construction project, raging mad. But I could see that he was only half-listening. He didn't care about warehouses, or about operations. I don't want to recall it," that was his most detailed answer to this question.

"Well, how about when you were an installation worker?"

"The machines then weren't like those today. You could cover them with a canvas. And we didn't take our eyes off them; if you didn't take care of your machine, didn't get it started -- you were disgraced. You see, today we have 'shame' boards for drunks and absentees. But those are sick people. Psychologically..."

He walked quickly away from me down the bay and stopped, apparently listening to "Sekretarsha direktora," who often became capricious with large loads. It occurred to me again that his "passport" age was probably a mistake. In one of our talks he said, "I did not have to get an education," and immediately added, "But even two diplomas don't always help a person on the job."

Yes indeed, this uneducated expert on electrical machines taught me a great deal during that trip. And I could say this included many things that are useful to those who do designs, organize production, and install and operate hydro power plant equipment.

And after I once again looked at how he bent down to the machine which he called "Sekretarsha direktora," I thought: "No, Ivan Savel'yevich Ryzhkov was a paramedic on installing and servicing machines long ago in his youth, but today he is a highly qualified doctor."

And when news of his death came from Saratov, he seemed to rise before me as if he were alive. A lot of water has flowed over the dam of the plant where he was obliged to install and then operate electrical equipment and electric machines and little has changed in caring for them at construction sites. How many times I have had to talk about this at all-Union conferences. Perhaps not so clearly as Ivan Savel'yevich Ryzhkov could?

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## OPPORTUNITIES FOR REDUCED COPPER CONSUMPTION REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 135-137

[Article by A. V. Burov, candidate of technical sciences, docent of Ukrainian Correspondence Polytechnical Institute, Artemovsk, Donetsk Oblast: "What Is Impeding the Conservation of Copper?"]

[Text] Despite the use of many new materials in industry, copper consumption is not decreasing. Extracting it is becoming increasingly more labor intensive. Today ore containing 0.2 percent copper is considered profitable. This means that in order to obtain 1 ton of pure copper, about 500 tons of crude ore must be extracted and subjected to various types of processing. Transport expenditures and energy consumption to do it are very large.

Of course, other less scarce metals are being substituted for copper. Nonetheless, in addition to the traditional spheres of use of copper and alloys new ones are appearing: the production of computers, equipment for desalting sea water, electric vehicles, and electric buses (they require 2-3 times more copper than internal combustion engines).

Naturally, the question arises: what then must be done to insure increased production of output made of copper?

The problem of rational use of metals is a focus of attention in many industrially developed countries; the gage of rolled metal products that has been achieved is convincing testimony to this. However, even the progressive enterprises of our country, among others the Moscow Zil Production Association and the Frunze Kirgizavtomash Plant, have already been using 0.065 gage rather than 0.025 gage copper strips for several years to manufacture radiator parts.

This fact attests to the exceptionally high economic effect from converting to less metal-consuming rolled products. Expenditures for the production of one 0.065 millimeter thick copper strip as compared to a 0.075 millimeter thick strip increased by 0.7 rubles, while the profits from increasing the length of the strip rose by 260 rubles. Using 1 ton of this strip enables 133 kilograms of copper to be conserved. Obviously, it is worth fighting for microns. And the main problem is being resolved -- copper is being conserved. After all, it is a matter of the production and use of tens of thousands of tons of fine

radiator strip a year. If we convert to 0.025 millimeter strip, then the savings in copper will total 670 kilograms and the profits -- 3,370 rubles for each ton, as compared to the 0.075 millimeter strip used extensively in the country. A fundamental economic effect can also be obtained from reducing the metal consumption of other types of rolled-stretched articles, for example, brass strips and sheets, pipes, and rods. All this is an enormous reserve for the production of additional output, equivalent to the construction of dozens of mines and plants.

But why, despite convincing arguments, is the solution of the problem of more rational use of copper being held back? What obstacles stand in its way?

The activity of interested organizations is very diverse. While the developers of the technology to reduce the thickness of rolled products show initiative, the Ministry of Nonferrous Metallurgy shows no apparent interest and enterprises that supply rolled products are even opposed. It is true there is an example where the Artemovsk Nonferrous Metal Processing Plant has been delivering 0.065 millimeter gauge copper strip instead of the 0.075 millimeter strip for more than 4 years; nonetheless, this valuable know-how is not widespread in the sector.

In solving the problem of conserving copper through further reduction of the gauge of fine strip, the well-known process of double-thickness rolling of strip articles on present equipment, by analogy with the production of the thinnest foil from aluminum and alloys on this basis, is of particular interest. This realistic and very promising way of conserving copper hardly requires any capital expenditures.

I must admit that reducing metals consumption is no simple matter. You must not think that all you have to do is give the order and metal will be conserved. The idea must also be rejected that metals consumption can be reduced spontaneously, without proper organization of this work. A simple example follows: if a manager uses too much metal, he is made answerable, but what if he can conserve but does not? He will not hear one reproof. All the more so if he is manager of a metallurgical or rolled products facility: after all, consumers conserve copper. The solution of the problem under review depends both on suppliers and on consumers of metal products. But they are subordinate to different ministries. And a kind of vicious circle has been observed for a long time: because of the lack of consumer orders the industrial technology of production of less metal consuming rolled products is not being developed and incorporated, while when these orders come to processing plants they are not fulfilled because of the lack of technology. And this is unprofitable for producers -- their labor productivity decreases: smaller-gauge strip or pipe yields fewer planned tons. Secondly, the article is lengthened and consequently machine time for finished rolling or drawing, cutting, winding, and rewinding as well as acceptance time at the department of technical control grows; that is, more human and machine tool-hours are needed to produce a ton of smaller-gauge finished article. When metals consumption is reduced, productivity in tons is also reduced and the need arises to increase the staff of finishing sections. Nonetheless, the main thing is forgotten here: copper is conserved; it simply does not need to be extracted and enormous sums of capital required to do it need not be invested.

Enterprises must more consistently adopt measures envisioned by the decree of the CPSU Central Committee and USSR Council of Ministers of 30 July 1981 "On Increasing Work on Conserving and Using Raw Materials and Fuel-Energy and Other Resources Rationally." It says, for example: "Many types of machines and equipment have high material intensiveness and specific expenditures of materials for manufacturing a number of articles are too high. Raise the demands on managers, engineers, designers, planners, production engineers, and other specialists to develop and introduce new equipment, more progressive technological processes, and other solutions which insure rational use and conservation of resources together with high output quality."<sup>1</sup>

These words apply fully to all enterprises which use copper. The example of the best production collectives shows that the production of output from copper can be increased two to three-fold without increasing the extraction and processing of ore. We have neglected to economize in copper in many cases, but that tranquil time has passed.

#### FOOTNOTE

1. SOBRANIYE POSTANOVLENIY PRAVITEL'STVA SOYUZA SOVETSKIKH SOTSIALISTICHESKIKH RESPUBLIK ZA 1981, No 20, pp 516-517.

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NEED FOR MORE PRECISE WAGE DISTRIBUTION IN BRIGADES NOTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 138-139

[Article by A. A. Rychikhin, chairman of the council of brigade leaders of the Tractor Plant imeni V. I. Lenin, Chelyabinsk: "The Main Thing Is Keeping Records of Output and Distribution"]

[Text] Until brigades began to be set up, we often ran into problems of reducing labor intensiveness and "cutting down" wage rates and other problems related to wages. And each worker was left to confront the problems alone although they watched the percentage of overfulfillment of output norms together so that the administration would not review the norms. But then the brigade form was introduced, and what do we observe? The changes that have occurred are significant.

Above all, we were convinced that a certain wage for the worker is always insured if he labors conscientiously and takes into account that the growth rate of labor productivity must exceed the rate for wages. The problem of "cutting down" wage rates becomes less crucial although it does not fully disappear. Secondly, we have seen that accurate distribution of wages and the ratio of wages of different worker categories play a special role which is even much more important. For example, young people do not stay with us. We began to look for the reasons. It turns out that a young person expects to receive some 300 rubles, and he is put down for 150. Unsatisfied, he leaves. Why is he insulted? At the wage rates? That has nothing to do with it. He has not yet gone through the school of life and he is not trained, yet he is already making demands. Sometimes demands are undeservedly met and then this worker earns some 300 rubles and begins to ask for more. Naturally, he does not like the present rules for reviewing norms and wage rates.

The question of distribution according to the coefficient of labor participation has proved to be somewhat surprising to us. When the brigade I was in charge of was formed, the base coefficient of labor participation, which took the difference in earnings of the basic worker, the repairman, and the loader into account, was introduced. The results we obtained were positive for 4 months, then a decrease was noted, satisfaction with labor declined, and labor enthusiasm disappeared. Once again we had to find the causes. We soon found them: before the brigade the distributor of work was in

the section and individual output was considered, but with the introduction of the brigade all this ceased to exist. We had prematurely decided that consciousness had sharply increased, people should trust each other without hesitation, and record-keeping was superstition. In a word we ran ahead.

We corrected the matter using the coefficient of labor participation, which is established with consideration of the specific features of the work position and the percentage of overfulfillment of output norms. As before I tried to prove that the principle "I earned it -- give me what is mine," closely related to the problem of reviewing norms and their "profitability" and "unprofitableness," was not operating in the brigade. In other words, payment was given according to the final result of the brigade as a whole, but individual record-keeping was restored. Expenditures of labor and the contribution of each person to the collective's output became known to all. Work began to go well.

In conclusion, I want to emphasize that norms and wage rates under the collective form of organization and stimulation of labor are interpreted differently than under the individual form.

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## PRACTICE OF SETTING PIECE-WORK WAGE 'CEILING' CRITICIZED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 139-140

[Article by V. S. Petukhov, candidate of economic sciences, deputy director of the West Siberian Branch of the Scientific Research Institute of Labor, Novosibirsk: "Earnings Should Be Earned!"]

[Text] Not long ago, when I was on business at the Siblitmash Plant, I dropped in at the cutting tool sharpening section where at one time I began my own labor activity. I wanted to meet and talk with my old friend, the sharpener Oleg Eduardovich Blank. I caught him at his work position behind the machine tool at which he was painstakingly grinding the cutting edges of a large heavy cutter. While he was finishing his work, I inspected the entire small section. It was gratifying to note the changes which had taken place: it had become substantially cleaner and lighter in the section; an efficiently operating exhaust fan led up to all the machine tools; and there were more diverse devices and equipment in the workers' arsenal. In a word, production sophistication had substantially increased. This means, I thought, the labor of the workers is more interesting, their mood is better, and productivity is higher.

"Yes, that's so!" Oleg Eduardovich confirmed my observations. "Work conditions in the section have really improved a lot. Now a person could work more productively."

"But why 'could'? What is holding back work like that?"

"Yes, I'd like to work like that. Everything needed to do so is available. And family circumstances require it. My son and daughter are both in school. Expenditures are growing and I bring in most of the money to our home -- I'm the head of the family. But I'm not working my hardest. Whether I work or not -- an artificial limit has been put up, and orders above this limit are not covered. What is this wall for? Who put it there? You -- the economist: you can answer, in whose interest is that? Neither mine nor the state's".

I thought about it. If even Blank, an old tool maker, talks like that, it means that then really something is not right in both the stimulation of labor and in the results of labor. Oleg Eduardovich came to the plant immediately

after the Army and he has already been working there for 20 years as a tool sharpener. He has thoroughly mastered his occupation and loves it; now he can do any kind of work, no matter how complex. He enjoys respect in his collective and many years he has been elected chairman of the shop trade union committee. When it concerned the section, he could pose questions and get them answered. And now -- clear dissatisfaction.

"The whole point is I'm a piece-worker," Blank himself explained. "And as you know, the wages for all piece-workers are determined by the amount of output produced or operations completed. But there is a limit; a 'ceiling' is established for us in overfulfilling output norms; in other words, the increase in labor productivity is restricted."

Later I checked and found out that this practice of establishing a so-called residual percentage of norm fulfillment has developed at many enterprises. Highly skilled workers who substantially overfulfill output norms (even if they are technically substantiated) do not cover some of the orders but carry them over to the next month, thereby creating the opportunity to work in the next period with even greater downtime without hurting wages. At the same time earnings of those who do not fulfill output norms are "stretched out" to the average. In these conditions it is not norms and wage rates which worry the worker, but the impossibility of honestly earning a bit more by correspondingly increasing the productivity of his labor.

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## WAYS TO IMPROVE CEMA SCIENTIFIC-TECHNICAL COOPERATION REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 141-155

[Article by M. S. Il'in, Z. Tvardik, candidates of economic sciences, and A. A. Popoudin, International Institute of Economics of the World Socialist System, Moscow: "Toward Greater Efficiency of Scientific-Technical Cooperation Among CEMA Member-Countries"]

[Text] The High Level Economic Conference of CEMA Member-Countries took place in Moscow from 12 through 14 June 1984. The basic directions of the further development and deepening of economic and scientific-technical cooperation of the fraternal countries for the long run were established. The Declaration "The Preservation of Peace and International Economic Cooperation" was adopted.

The conference emphasized that important economic problems of mutual interest and importance for economic development and cooperation for the long run in each of the fraternal countries will be jointly solved, and paths to direct interaction in science, engineering, production, and capital construction will be developed as well.

Considering universal acceleration of scientific-technical progress especially urgent, the conference participants made arrangements for collective development of the Comprehensive Program for Scientific-Technical Progress on the basis of national programs. This program will become the basis of the agreed-upon, and in some fields unified, scientific-technical policy, the goal of which is to solve major problems in the sphere of science and engineering and introduce the results achieved into production in interested countries under mutually advantageous conditions as rapidly as possible.

The leaders of communist parties and heads of state of the participating countries emphasized the urgency to further expand the scope and increase the efficiency of mutual cooperation.

### The Dynamics of Scientific-Technical Potentials

A steady increase in absolute expenditures for NIOKR [scientific research and experimental design work] has been observed in all of the European CEMA

member-countries in the last decade. From 1970 through 1980 these expenditures rose by a factor of 2.1 in Bulgaria; in Hungary -- 2.8; in the GDR -- 1.8; in Poland -- 3.3; in the USSR -- 1.8; and in Czechoslovakia -- 1.6. However, analysis of the expenditures of these countries for the last two five-year plans shows a certain trend toward decelerated growth rates. Thus, increase in expenditures for the period 1970-1975 and 1976-1980 totaled, respectively, 48.4 percent and 42 percent in Bulgaria; 80 percent and 36 percent in Hungary; 150 percent and 34 percent in Poland; and 39.3 percent and 15.3 percent in Czechoslovakia.

In the 1970's on the whole, the proportion of expenditures for NIOKR increased from 2.1 to 2.3 percent in Bulgaria's national income; from 2.8 to 3.7 percent in Hungary; from 3.9 to 4.3 percent in the GDR; from 1.8 to 2.4 percent in Poland; from 4 to 4.7 percent in the USSR; and from 3.6 to 3.8 percent in Czechoslovakia. Furthermore, the proportion of expenditures for NIOKR in the national income of the European CEMA member-countries increased in the period 1971-1975; after that it stabilized or even declined.

The trend toward reduced growth rates of expenditures for NIOKR in the past five-year plan is to a certain degree explained by the fact that the CEMA member-countries have adopted a course to intensify scientific activity. It may be assumed that as a result of this course the share of expenditures for NIOKR in the national income will be kept at approximately the same level in the near future. This will mean an increase in absolute expenditures for NIOKR at a rate corresponding to the growth rate of national income.

The basic source for increasing the capital-labor ratio and improving the structure of fixed capital of scientific research activity is capital investments allocated for these purposes. Capital investments in scientific-research activity rose by a factor of 2.1 in Bulgaria in 1970-1980; by a factor of 1.8 in Hungary; 1.7 in Poland; and 1.3 in Czechoslovakia. A decline in the growth rate of these expenditures was also noted in the second half of the decade. The proportion of capital expenditures in the total expenditures for NIOKR in the countries enumerated did not exceed 22 percent in the period 1970-1980. The share of these expenditures reached the highest level at the start of the period in question. A distinct trend toward a decline in the indicator subsequently developed. It amounted to 16 percent in Hungary by 1980; 11 percent in Poland; and 12.7 percent in Czechoslovakia. The share of capital expenditures in the NIOKR sphere averaged 13 percent in Bulgaria and hardly changed during this period. It should be noted that the trend mentioned cannot be considered a favorable one in relation to the CEMA member-countries which, as is well-known, lag slightly behind according to capital-labor ratio and, especially, in supply of contemporary and, as a rule, capital-intensive scientific equipment.

The comparatively low proportion of wages should be noted in the structure of expenditures for NIOKR. On the average wages amounted to 34-40 percent of the total expenditures for NIOKR in 1980 for Bulgaria, the USSR, and Czechoslovakia, while in Hungary it was even lower. The proportion of these expenditures in these countries, excluding Poland, remained at practically the same level in the past decade. The rate of increase in average monthly wages in the sphere of science and scientific services for all European CEMA member-

countries in 1970-1980 was substantially lower in comparison with its rate of increase for the national economy as a whole. The level of wages in the sphere of science and scientific services is approaching the average level of wages for the national economy as a whole. While wages in the sphere of science and scientific services were 10-22 percent higher than average wages in Bulgaria, Poland, Romania, the USSR, and Czechoslovakia in 1970, by 1980 they were only 6-8 percent higher for the countries mentioned (except Czechoslovakia), while these wages are now even 4 percent lower than the average level in Hungary. In our opinion, the lower growth rate of wages in the science sphere, which today has become a direct productive force, is unjustified. One of the negative aspects of this process may be, in particular, a reduced influx of talented young people into the NIOKR sphere and decelerated growth of their scientific skills.

#### Scientific Personnel

An increase in the total number of workers engaged in the NIOKR sphere was characteristic of all European CEMA member-countries in the past decade. This appeared both in absolute growth and in the growth of the proportion of this category of workers in the total number of workers and employees engaged in the state and cooperative sectors. The increase in the number of this category of workers was 190 percent in Romania from 1970 through 1980; 147 percent in the GDR; 146 percent in the USSR; 142 percent in Bulgaria; 133 percent in Hungary; and 123 percent in Czechoslovakia.

This growth occurred at the fastest rate in 1970-1975. The growth rate in the number of people engaged in the NIOKR sphere slowed down in all of these countries except Czechoslovakia in the second half of the 1970's. This increase did not exceed 115 percent in Bulgaria, Hungary, and the GDR during this period. The number of people engaged in science and scientific services in Romania increased at a rather fast rate during the past five-year plan (by 31 percent in the five-year plan period).

The proportion of the NIOKR sphere in the total number of people employed in the state and cooperative sectors of the national economy also steadily increased during the past decade in most countries. An especially significant increase in the proportion of people engaged in the NIOKR sphere was noted in Hungary (from 1.80 to 2.12 percent), the GDR (from 2.07 to 2.43 percent), Romania (from 1.15 to 1.50 percent), the USSR<sup>1</sup> (from 3.32 to 3.89 percent), and Czechoslovakia (from 2.60 to 2.85 percent).

The number of scientific employees increased many times faster than the total number of people engaged in the NIOKR sphere in the overwhelming majority of countries in the 1970's. The number of scientific employees with university doctoral or candidate of sciences degrees rose at an even faster rate; this attests to the qualitative improvement of the structure of those engaged in the NIOKR sphere.

However, the influx of specialists with higher education into the sector of science and scientific services progressed at a substantially slower rate in the past decade than in other economic sectors of the state and cooperative sectors. Whereas in industry, construction, transport, and agriculture the

level of saturation of specialists with higher education rose on the average by 50 percent in Poland and by 40 percent in the USSR and Czechoslovakia from 1970 through 1980; this indicator was 8 percent, 24 percent, and 19 percent, respectively, in science and scientific services.

Rather unexpected advances appeared in the dynamics of the proportion of scientific personnel of different sectors of science in juxtaposition with the trends of development of science and the goals and priority tasks of scientific-technical policy. The technical sciences, whose development is closely related to scientific-technical progress, enjoyed priority with respect to increase of scientific personnel only in the USSR and to a certain degree in Bulgaria. The agricultural sciences were in one of the last places in all countries in this regard. The social and humanitarian sciences enjoyed priority as compared to other sciences in almost all countries except Bulgaria.

In conclusion we will compare the proportions of national personnel potentials in the total personnel potential of the NIOKR sphere for the European CEMA member-countries.

This share in the total personnel potential of those engaged in NIOKR in Bulgaria, Hungary, and the GDR looks comparatively stable during the decade. However, there are disproportions in the contribution of certain countries to the total NIOKR potential both in total number of workers engaged in NIOKR and in number of scientific workers. The USSR has the lion's share: 81.4 percent and 78.1 percent with a population which comprises 70.8 percent of the population of all European CEMA member-countries. There has been no fundamental reduction of the gap between countries in the level of saturation of scientific workers figured per 10,000 people in the period under question. Bulgaria reaches only half this indicator for the USSR; Hungary -- 70 percent; the GDR -- 82 percent; and Czechoslovakia -- 88 percent (for 1980).

The share of the countries of the socialist community in the world personnel potential of science is higher than their share in financial resources directed to NIOKR purposes. This speaks, in particular, of the comparatively low financial level and the material-technical level which is dependent on it of the support of science in the CEMA member-countries as compared to the industrially developed capitalist countries.

#### Ratios Within NIOKR

To successfully realize scientific-technical policy, it is important to maintain optimal proportions among individual types of NIOKR: fundamental research, applied research and development, and current expenditures for them. Fundamental changes in the ratios of the volumes of these expenditures for different types of research and development did not occur in most European CEMA member-countries in the 1970's. These expenditures averaged 15, 33, and 52 percent, respectively, for all countries. However, a trend toward redistributing capital to the benefit of applied research and development is noted. The share of expenditures for fundamental research has slightly decreased.

In This Situation. . .

Some trends of development of scientific-technical progress noted confirm that the European CEMA member-countries have earnestly approached the need to convert to a primarily intensive path of development in the scientific-technical sphere as well. This poses questions of the resource support of science in a new fashion.

Intensification of scientific activity means that scientific results must be increased using qualitative factors -- increased qualifications of personnel, better procedural, material-technical, and informational support of science, improved planning and management, and better cooperation of scientific work on the national and international level. A closer correlation between the development of science and the requirements of social practice is becoming decisive, beginning with the substantiated selection of important research topics and ending with the increasing participation of scientists in the accelerated incorporation of scientific achievements into practice. Regardless of the type of its own development (extensive or intensive), science remains one of the main factors of the intensification of the processes of social reproduction. The intensive development of science presupposes increasing and deepening ties going from it to production and other spheres of social life, but also the existence of counter ties which provide the sphere of science with necessary personnel, finances, technical means, and so forth. The process of intensification of science is also limited by the fact that in contemporary conditions, acquiring fundamentally new scientific knowledge is becoming increasingly difficult and is characterized by increased labor intensiveness and cost for both the cognitive process and the process of introduction.

In the period of accumulation of revolutionary advances in science and engineering, new scientific directions are continually arising. They entail structural changes in the sphere of scientific activity and require not simply prompt reorientation of existing people and material resources and the liberation of science from the ballast of barren subdivisions, but the expansion of the sources of growth of science as well. In these conditions the need remains to conduct training of new and retraining of existing scientific personnel, maintain their optimal structural proportions, organize production of new laboratory equipment, and expand experimental and experimental-production capacities.

Excessive acceleration of investments in science which exceed social needs and economic opportunities to introduce scientific results would be to the disadvantage of the national economy. Nonetheless, it would be even more ruinous to permit an unjustified deceleration of the rate of development of science and a loss of potential opportunities for technical and socioeconomic progress. In the future, the development of scientific research and development must be conducted through the utilization of not only exclusively intensive but to a certain extent extensive factors as well.

## Selectivity and Comprehensive Planning

With the further improvement of the structure and dynamics of development of the scientific-technical potentials of the CEMA member-countries, a solid front of scientific research should be insured in the socialist world. Despite the importance of expanding scientific-technical ties with capitalist countries, the development of some of our own scientific fields or directions must not be abandoned.

All the CEMA member-countries face the very similar task of maintaining the proportional development of fundamental and applied research and experimental-design development, given the rapid growth of fundamental scientific projects begun and the simultaneous rapid practical utilization of scientific achievements, the accelerated development of new scientific directions, and the growth of interdisciplinary research.

The structure and dynamics of the growth of the scientific-technical potentials of countries of the socialist community will not only be developed as a result of following national interests in the area of the scientific-technical policy of the CEMA member-countries, but to an increasing degree will be determined by agreed-upon (coordinated) scientific-technical policy, the object of which should be the total scientific-technical potential of these countries. The role and significance of international scientific-technical cooperation as an instrument of coordinated utilization of the scientific-technical potentials of the cooperating countries is substantially because of this.

Extensive factors continue to predominate in the sphere of scientific-technical cooperation of the CEMA member-countries and the success of cooperation is measured by the number of organizations participating in it, the number of subjects included in cooperation plans, and so forth. The simplest form of coordination which at times is not related to any serious obligations of the countries and does not take into account changes occurring in the organizational-management and economic plan structures within the countries continues to predominate. Given the great diversity of the subjects of cooperation, the number of new articles which meet world standards is not very great. They amounted to 2.2 percent of the total number of incorporated articles for Czechoslovakia in 1980 and 1.8 percent for Bulgaria. Attempting to cooperate on a broad front of scientific-technical problems leads to a situation where it is practically impossible to insure the "critical mass" of research and development for each problem or subject taken individually. This deadens part of the scientific-technical potential involved in cooperation. Among the main unsolved problems of international cooperation we would mention the following.

Problems for cooperation are frequently selected without serious substantiations and technical-economic evaluations. Very often countries which have presented a certain problem for the cooperation plans also conduct its full development on their own. Parallelism and duplication leads, among other things, to a situation where there is a shortage of problems crucial to the given stage of scientific-technical progress. The subject area of developing fundamentally new resource-conserving technologies and new sources

of energy is poorly reflected. There are too few developments aimed at mechanizing and automating labor intensive production processes and the proportion of subjects oriented to a fundamental increase in the quality of machine building output is insignificant. Orientation to developing and producing progressive assemblies and parts is inadequate. Less than 7 percent of the agreements on scientific-technical cooperation envision their creation.

In this connection it would appear to be important that questions of selecting priority subjects for cooperation occupy a central place in consultations being conducted on scientific-technical policy on a bilateral and multilateral basis. It would be advisable to formulate plans for international scientific-technical cooperation, especially those oriented subsequently to the contract form of realization, on the basis of the criteria of purposeful selection. This practice can be introduced gradually, to start with in certain selected directions of cooperation. The first step has already been made: The CEMA Committee on Scientific-Technical Cooperation has acknowledged the need for technical-economic substantiations for all problems being planned for joint solution.

The problem of introducing scientific-technical results achieved during international cooperation into the production of the CEMA member-countries remains urgent. At the present time we do not have proper interrelationships in scientific-technical and production-economic cooperation, and the incorporation of results achieved remains at the discretion of each cooperating party.

According to approximate expert evaluation, losses from duplication in NIOKR stages and incorporation of its results reach several billion rubles a year in the CEMA member-countries.

Inasmuch as the process of introducing results has not become a subject of distribution of labor and cooperation in the multilateral relations of the CEMA member-countries, in our opinion posing the question of organizing a new, sufficiently independent field of cooperation -- joint introduction into production of results of scientific research achieved during cooperation is already proper. With this approach it becomes realistically possible to coordinate capital investments for the joint construction of necessary production capacities or reconstruction of existing ones, the allocation of which is practically always associated with difficulties for one or many countries. This deserves attention, especially in connection with the focus of international specialization and cooperation in production on new equipment and progressive technology, where coordination of investments is a major precondition to the materialization of scientific-technical results. It appears important in this respect that mutual consultations being conducted by the countries devote a great deal of attention to planning the introduction of anticipated results and that they identify the problems whose solution is advisable within the framework of comprehensive scientific-technical programs which encompass the entire reproductive cycle.

The practical realization of these programs is becoming a possible way to conclude comprehensive (general) agreements. As an initial step preceding the switch to comprehensive agreements, it would be proper to create a system of

interrelated agreements on scientific-technical cooperation, specialization and cooperation in production, and foreign trade agreements. In practice this would also mean the mandatory existence, preceding any agreements on cooperation in production, of corresponding agreements in the scientific-technical sphere aimed at increasing the level and quality of the output in question. Given the interrelatedness and continuity of these agreements, the results of the agreements on science and engineering will as a rule be the experimental models or experimental series of output planned for production within the framework of the agreement on international specialization and cooperation in production.

#### FOOTNOTE

1. For Romania and the USSR, the sphere of science and scientific services.

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## EXPERIMENT TO MONITOR RESULTS OF MANAGER'S ABSENCE OUTLINED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 157-163

[Article by V. P. Goryainov, All-Union Scientific Research Institute of Systems Research of the USSR Academy of Sciences, Moscow: "A Manager's Vacation Experiment"]

[Text] Let us remember how some managers, and perhaps even you yourself, have pronounced with disapproval to someone after a vacation: "What I left is what I returned to. Everything stays the same. This question could be solved without me." Or, on the contrary, you noted with surprise: "Somehow things went too smoothly for them while I was gone." But certainly no one has systematically and in a planned way made such observations.

Every year we can obtain valuable information for management using a small but well-thought out experiment, but we do not attach any significance to it. This is a shame.

It seems to me that experimentation will become just as inseparable a function of management in the future as planning, record-keeping, and monitoring -- and experimentation should be studied now. Understanding the rudiments of experimentation, organizing observation, and drawing accurate conclusions will in part help conduct the vacation experiment better. Although this is only a micro-experiment, all the basic conditions characteristic of any experiment conducted in natural social conditions are seen in it.

Do Not Warn, Do Not Safeguard, Do Not Try to Solve. . .

The plan of the experiment includes measuring the initial condition, the experimental impact, and the condition achieved, as well as comparing the initial and achieved conditions. In practice this means that the manager subjectively observes and measures his own personal work as well as the condition of his collective (above all his immediate surroundings) in the first phase of the experiment. Then the vacation follows -- the absence of your direct management influence on those around you (the suspension of influence is also an impact). The same subjective observation and measurement of the impact of your absence ("I came back to the same thing") is conducted

in the second phase, after you return from vacation. The third stage is discussed a little further below.

For the manager the first phase or the pre-vacation period begins with warning his acting replacement (it is preferable to select him from the reserve for your post) in advance that he remains under you and that you will let him know about the latest affairs, but this information is not for general dissemination. It is recommended not to advertise the time you are leaving on vacation and to make only pressing current decisions if possible. Do nothing but what is usual in this period. In this way you will increase the purity of the experiment and the impact of the suddenness of your departure, and demonstrate confidence in your acting replacement and give him the opportunity to occupy your post for real. In the last days before your vacation, officially designate your acting replacement and tell him that he faces important work, ask him to move into your office, and transfer his own work to a reliable associate rather than overwork himself in two posts at the same time.

For comparison, we will note that the pre-vacation period for a manager who is not doing the experiment (theoretically he can be considered to be avoiding a risk, not trying to know himself and his people better and to verify their abilities), this is a difficult time. He tries to do everything he can and cannot do himself: warn, safeguard, make agreements, "ventilate," sign papers, solve problems and so forth. All the subordinate and higher offices notified of his impending vacation tear the manager to pieces, forgetting that before vacation every manager feels the fatigue which has accumulated during the year and work goes on, frankly speaking, till he is worn out.

#### The Manager Rests and the Experiment Is On

Finally, the vacation begins -- peace, rest from "ranks and uniform," fishing, mushrooms, hunting. But what manager's heart does not skip a beat with the thought: "How are things going there without me?" It is easier for the experimenting manager to keep his composure: he is experimenting and that says it all: he will return from vacation not only with "regret to be leaving," but with interest as well.

After vacation, the second and third phases of the experiment begin (in practice they are difficult to separate). They are devoted to explaining the differences in the initial and achieved conditions; determining what is the cause and what is the consequence; why what happened, happened; and whether the absence of the manager influenced the origin of what happened and whether the repetition of something similar is possible in the future.

Although scientists dispute the validity of conclusions drawn from studying an individual case, nonetheless the "case study" method is becoming increasingly more widespread in the science of management and management consultation. Experienced managers are convinced that with in-depth knowledge of the people and the conditions under which they work, reliable practical conclusions can be drawn on the basis of analyzing a single case. Nonetheless, an experimenting manager can be advised to avoid typical mistakes:

Do not yield to the inclination to see things and people as you desire to see them, or your managers, colleagues, or the authorities under whom you work. The ability "not to fully enter into" a situation and the ability to go beyond its limits and see your collective and yourself as if from the outside, is a valuable quality of a manager;

Be as self-critical as possible and remember that you by no means control all the parameters of the situation, and therefore you should have several alternative explanations for any particular case. In other words, if everything has suddenly become clear to you and you can explain everything simply, then consider that you have lost part of your self-critical ability. To avoid this, share your conclusions with your colleagues and other people who do not depend on you and ask them for advice.

Do not be afraid to admit that you cannot explain all unclear cases. When you have many hypotheses on the causes of a particular incident which occurred in your absence, but all of them seem unsatisfactory to you, then it is most likely that you are close to true understanding. The future course of events will sooner or later allow you to verify the hypotheses advanced. More succinctly, conclusions should not be drawn in haste or blindly, without adequate substantiations. Do not hurry to draw conclusions.

#### After You Return, You Can See a Great Deal

We will consider the data which can be obtained by observation and analysis.

Above all, one should take advantage of the effect of the "fresh perception" of the environment which arises after vacation and the harmonious merging with nature; this will help you look at the situation from a new point of view. It is better to write down your first impressions immediately. To a certain degree you can note changes in the socio-psychological climate by the general work mood of people or by whether people smile at you or turn their eyes away. In a few days you will partially lose sensitivity to all this and you will not be able, even if you want to, to see hardly noticeable but important signs. It is more difficult to determine whether these phenomena were caused by your absence. Here the possible hypotheses should be tested better.

It is quite easy to determine which of your subordinates proved to be excessively self-assured or carefree; those associates easily and calmly "sent" you off on vacation without any additional questions, but were the first to approach you on return to receive instructions on overdue matters.

How correctly did you select your temporary substitute? This can be determined by many signs. If a "horde" of subordinates and representatives of higher offices "fell on" you immediately, this means that everyone just waited for your return, not expecting authoritative solutions from the substitute. But be careful in your conclusions and think: perhaps you yourself trained everyone that only you and no one else was in the position to try to solve questions correctly?

The degree of competency and decisiveness of your substitute can be determined by how many and which questions he left for you and which ones he managed to solve. If a stack of unsolved matters has piled up on your desk, it is possible that he did not show the proper decisiveness and competency; nonetheless, this hypothesis should be carefully verified when talking with him. It is entirely possible that the questions which arose were really complicated and that even you could not have dealt with them in that period of time.

Whether your acting replacement was too decisive and "committed follies" can be determined by the emergence of new conflicts which did not exist before your vacation and by substantiated complaints against him. To what degree you are the work leader in the collective can be determined by the extent to which all attempts to solve questions were made in the spirit of your instructions, assuming, of course, that you have formulated your strategy and management precepts precisely, clearly, and openly. It may turn out that no one could foresee how you would act in a certain instance, what you would approve and what you would reject. This means that you have become a so-called irreplaceable manager. It is possible that such a situation will satisfy your pride, but it is bad for your organization and in the near future may distress you personally. This confirms that your strategy and your leadership policy will be reviewed and forgotten as soon as you transfer to another job or go on pension. Probably you are not indifferent to this. There is something to think about here and cause to look for the reasons for the situation which has developed.

Naturally you know better than anyone what disturbs you about yourself and those surrounding you and what you would like to verify in this type of experiment. Your vacation is the best time for such an experiment.

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## BOOK ON MANAGEMENT OF SCIENTIFIC ORGANIZATION REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 165-170

[Review by D. N. Bobryshev, doctor of economic sciences, and S. P. Sementsov, candidate of economic sciences, Academy of the National Economy of the USSR Council of Ministers, Moscow, of book "Upravleniye v nauchnom uchrezhdenii" [Management in a Scientific Institution] by G. A. Lakhtin, Energoatomizdat, Moscow, 1983, number of copies not specified, 144 pages]

[Text] The work under review first attracts attention because of the timeliness of the subject. Opening up the book, the reader has a right to expect to receive theoretically substantiated answers to many practical questions. How must management in a scientific institution be organized and how should its efficient functioning be insured? What is the specific nature of science as an object of management? Can methods of management worked out in industry be applied in science? What are the features of the work of a manager of a scientific collective? In what directions is it most promising to use contemporary technology to improve management? Documented answers to these and other questions are given in the book and, what is especially valuable, many of the proposed recommendations can be used directly in practice.

Two basic ideas are consistently realized in the work. The first is that management ["upravleniye"] in both technology and economics can be of two types -- by deviation and by disturbance. The author illustrates this point with examples, including ones borrowed from the theory of automatic regulation. Of course, he does not mean to fully equate management in technical and economic systems. The author justifiably notes that processes of management in socio-economic systems are significantly more complex and richer. Rather than fulfilling orders the realization of decisions is carried out in them and the opportunity arises for subjective influences in the management organ due to this organ having its own goals which differ from those of the system; each element of the socio-economic system is simultaneously both a managing element and an element being managed.

The second idea being developed by the author is that it is advisable to differentiate management of a scientific organization as a specific labor collective and management of research and development as a type of activity.

Managing a contemporary scientific institution without knowing the patterns of development of the object of management itself means being condemned in advance to the inefficient use of resources. But how does G. A. Lakhtin define these patterns? In the first place, they are due to the specific nature of science itself as a system of organizations in which activity to "produce" knowledge is conducted (p 23). The uncertainty of results, their nonmaterial nature, and the lack of a direct tie between results and expenditures are what fundamentally distinguish science from the sectors of material production. The fact that maintaining the stable activity of a scientific organization is not an end in itself but a precondition for achieving scientific-technical goals is conditioned precisely on the specific nature of science (p 24).

Unsubstantiated plan adjustments are frequently subjected to justified criticism in party documents and in print. Nonetheless, does the conclusion follow from this that any adjustment of the plan is harmful? G. A. Lakhtin convincingly demonstrates that the likelihood of the appearance of unforeseen circumstances and changed goals and research tasks is very high in science with its inherent uncertainty. Because of this, adjustment of the plan is very likely and at times even inevitable, especially when conducting fundamental research.

An important pattern of development of science is the strengthening of its inter-sectorial nature. In contemporary conditions, not one sector can be developed nor is it developed through its own efforts alone. And, as the author emphasizes, important developments which make the most fundamental contribution to scientific-technical progress are to the greatest degree inter-sectorial (p 40). The contradiction between the sectorial affiliation of scientific-technical potential and the inter-sectorial nature of science is a factor which compels us to improve the organizational forms and methods of the management of science.

Finally, the conclusion is important that management of science is closely linked with management of scientific-technical progress (p 25) -- it follows from this that innovation, rather the organization or simply the subject, is the basic object of management. Management should be increasingly oriented to the scientific institution's own goals and to final results being achieved in the production sphere.

In order to insure the efficient functioning of any object of management, it is important to use a system of management methods adequate to its nature. The book reviews the evolution of management methods and their applicability for particular tasks.

Economic methods occupy a central position. Scientific activity and its product have a directly social nature, and therefore direct economic accounting plays the main role for science. The uniqueness of scientific institutions consists in the fact that an economically significant effect is not formed where expenditures were incurred, but rather in production. By the same token, using cost accounting based on comparing expenditures and results is made difficult (p 30). Economic effect in science differs fundamentally

from the economic effect of capital investments and production profits. Genuine self reimbursement in science appears in that the effect from introducing results of developments cover the expenditures of the developer-organization. Therefore cost accounting in science should be organized on a fundamentally different basis and should be cost accounting of organizations rather than subjects.

The nature of science as an object of management and the specific nature of management of the collectives of scientific organizations demand that specific methods of management be used. Questions of developing and realizing scientific-technical programs and using cost accounting in organizing scientific research have been repeatedly considered in the literature. A specific feature of the author's approach to these problems is viewing them as if from within, as seen from the basic link of science -- the scientific institution.

Research and developments as objects of management include many features which stem from their one-time nature, uniqueness, and scientific uncertainty. This object evolves rapidly, moving beyond the capabilities of individual organizations. It requires its own specific management mechanism. Using scientific-technical programs in this field is most promising. While the programs were an episodic phenomenon, there was no need to create a special system for managing them. Such a need exists today. The author demonstrates that for different types of programs, correspondingly different organs and management methods are needed. The allocation of resources for a particular goal and management of the activity of the performers to achieve it is common to the management of all types of programs.

To a great extent, the success of scientific research is determined by the choice of subjects. However, scientific uncertainty does not permit the managing organ to unequivocally tie the distribution of resources to the establishment of goals. The opinion of the performer himself as to which means and what time are needed to obtain results is needed. No one can know the particulars and details of his subject better than the performer himself; therefore, his participation in planning and evaluating results is inevitable.

Problems of the structure of management of a scientific organization occupy an important place in the book. The main question of forming organizational structure is the method of grouping personnel. The book examines various methods of forming structures -- functional, special purpose, and matrix structures -- used to perform various tasks.

Organizational structure also has a fundamental impact on methods of material and nonmaterial incentive. Although dividing scientific associates into "functional" and "special purpose" associates is very arbitrary, the proposal to differentiate the incentive system depending on whether the content of the associate's activity is the achievement of a certain goal or the realization of a constant function is interesting.

Nonetheless, no matter what object of management we are speaking of, management in socio-economic systems is the management of people. Research conducted on the specific nature of scientific collectives, the role of the

manager in their work, and the personality factor in managing scientific institutions will undoubtedly be of special interest to the reader. It is perhaps the first time these questions have been considered in such detail in our literature devoted to management in the science sphere.

According to the author's deep conviction, the main role of the personality in the management of science is the influence it has on the selection of subjects: "who does it" determines "what is to be done" (p 117).

Evaluating the activity of the scientific associate and his contribution in solving problems is an important problem. The book demonstrates with documentation that there cannot be a single method for evaluating the scientific employee. An optimal system of evaluation is one which insures minimum expenditures for producing evaluations and determines the damage from insufficiently substantiated decisions. Such a method of evaluation should deal with a certain category of employees and be used to make a certain type of decision -- hiring and firing, rewards, promotions, and so forth (p 124).

The problem of gerontocracy is very delicate in science. In our opinion, the author's appeal for thorough special research on the link between age and ability to manage scientific work deserves attentive consideration (p 116).

The concluding section of the book is devoted to the automation of management in a scientific institution. This is an interesting chapter but we can hardly agree with the author's assertion that automation is a most important way to increase management efficiency in scientific institutions (p 125). As far back as 15-20 years ago it seemed that using a large number of computers could solve management problems. Nonetheless, life has shown that introducing automated control systems has a noticeable effect only when combined with improving the structure and methods of management and seriously increasing the qualifications of management personnel. The use of automated control systems in scientific institutions is associated with much greater difficulties than in industry, and their field of application is more restricted. The author justifiably notes that the task of an automated control system is to improve the preparation of management decisions. But in light of this, the first and most important stage -- the determination of goals -- yields to formalization with difficulty. Only an analysis which is rich in content, with the participation of qualified specialists, makes it possible to determine goals and their priorities.

The book is also not free of shortcomings. In our opinion the main one is the author's enthusiasm for the conceptual apparatus of the theory of automatic regulation. This is a widespread shortcoming in management literature. It usually leads to a situation where the basic fundamental concepts on which management in a socialist society is based are concealed and obscured.

Another shortcoming is related to the tendency which is often encountered in the literature to consider planning and management separately. As a result, questions of planning are not found in the book.<sup>1</sup> Therefore, the analysis of management problems proves to be meager. Dividing managers into those who are inclined to manage by deviation -- those who for the most part use information "from below" -- and those inclined to manage by disturbance -- those oriented

primarily to instructions "from above" -- can also hardly be acknowledged as successful (p 13). The description of the manager of an organization as an administrator and a manager of subjects as a scientific leader is also very simplistic (p 109). The discussion of such questions as, for example, "whether a scientific manager can be bred," to which the answer is given that innate qualities predominate in the development of a leading researcher, while acquired qualities predominate in his transformance into the manager of an organization, also does not raise the value of the research (p 114).

But on the whole we can recommend that managers in the sphere of science and engineering read this book. It will be a good manual for them when analyzing management problems.

#### FOOTNOTE

1. It is true that the author published the book "Ekonomika nauchnogo uchrezhdeniya" [The Economics of a Scientific Institution]. where questions of planning are examined.

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## BOOK ON SELF-INSTRUCTION IN SPEED READING REVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 170-176

[Review by T. R. Boldyreva of book "Tekhnika bystrogo chteniya" [The Speed Reading Technique] by O. A. Kuznetsov and L. N. Khromov, 2nd edition, revised and supplemented, Moscow, "Kniga", 1983, 70,000 copies, 175 pages]

[Text] This book does not stay in stores or on library shelves for long. Its authors are well known for their many articles devoted to teaching speed reading. Readers are also acquainted with the first edition of this book which came out in 1977. An experimental course of exercises developed by O. A. Kuznetsov and L. N. Khromov for those wishing to independently master the speed reading method was published in ZHURNALIST in 1973. This method was demonstrated at the Exhibition of Achievements of the National Economy of the USSR and received a bronze medal.

And now the attractive, well-designed book with amusing illustrations by Yu. Aratovskiy has come out, with an announcement on its cover: "How can you learn to read scientific-technical and popular texts rapidly? And understand and remember what you read better than with your usual reading? This book answers such questions. It also teaches how to independently master the skill of speed reading."

What a find! Precisely what is needed!

The book will also be met with great interest since up to this point readers have not had many publications on the subject. Interest in speed reading did not appear in our country until the 1970's. Since that time several books on the subject and many articles in journals have come out (we remind you of the review of the results of instruction and proposed methods in EKO, No 3, 1980). These books focused on the practice of teaching speed reading and all of them differed fundamentally from one another and from the book under review. But they were published either by local publishers<sup>1</sup> or departmental ones.<sup>2</sup> Few people know about them. Therefore, for most readers the book by O. A. Kuznetsov and L. N. Khromov is the first from which they learn of the existence of speed reading, and which they will use to teach themselves its methods.

The method of instruction is the result of more than a decade of research by the authors. In those years 5,000 people were taught by it and elective courses on the speed reading technique have been organized at school No 299 in Moscow since 1981. The high efficiency of instruction -- it says in the introduction -- is proven by sociological surveys.

So, the methods of instruction have been verified by experience and suggestions and observations by those being taught on improving the course have been taken into consideration. It has the right to be called a mass technique: 5,000 people is sufficient to verify its vitality. It is true that the authors of the book do not specify how these people were taught -- independently or in classes with a teacher. And this is important. However, we will discuss this later.

Let us try to view the book through the eyes of those for whom it is intended -- those desiring to master the speed reading method.

Introductory chapters. Facts, data, and quotations flash by. To some extent they are familiar to those who followed publications on speed reading which have been appearing since the early 1970's. The information explosion, the low efficiency of reading among teachers of the technical sciences, and interesting data on which specialists read most. It turns out that it is not philologists at all, but biologists and then physicists and only then the humanitarians. People working in the technical sciences read least of all. The definition of speed reading. Then foreign experience and the history of the "enlightenment" of the founder of speed reading methods, Evelyn Wood. Instruments used abroad to accelerate reading -- the phraseoscope, the tape trainer, and the pacer. Educational films in England, the "Speed Reading Course" textbook in France -- 2 volumes, 1,035 pages. Dissemination of the method in the socialist countries.

All this is undoubtedly a good introduction to the problem in the traditional sense of this word. But the reader who is thirsting to learn to read rapidly and expecting above all practical benefit from the book cannot fail to ask himself (and the authors of the book) several questions. These, for example.

The book says that "the optimal method of instruction has not been developed abroad, despite the long history of instruction in speed reading. There, obviously, the specific features of private enterprise, where each center hurries to announce that it is precisely its methods which are the most effective, have an impact." However, it would be interesting to know what is characteristic of foreign methods, how they differ from ours, including those offered in the book, what is valuable in them for our experience and what can be rejected, and how instruction is organized (in large or small groups, for example). And -- this is very important -- how do matters stand with independent learning? The chapter on foreign methods has hardly been changed as compared to the first edition. It is only supplemented with a report on a new method of instruction which only requires a few days to fundamentally accelerate reading. The essence of instruction is work with a computer and display screen.

The information that in instruction abroad they have begun to discard instruments considered irreplaceable in the first years of dissemination of the method is interesting. Experiments of foreign researchers have convincingly demonstrated that the method without equipment is just as effective. However, in our country there are often references to difficulties in organizing instruction because of the lack of equipment.

And how is the dissemination of speed reading methods in our country covered?

The chapter devoted to this has been expanded in comparison with the first edition. In this chapter the research of I. Z. Postolovskiy and Ye. G. Semenov (Odessa) -- their "reading accelerator" instrument -- and practices in teaching young school children are described more or less in detail. Research conducted in other cities of the country -- Minsk, Kaunas, and Leningrad -- and in the laboratory of dynamic reading of the Novokuznetsk Pedagogical Institute is mentioned. But this chapter is a simple enumeration of the centers in our country where speed reading is taught. Of course, a detailed analysis of the methods being used (we again repeat that they are all different) and of the specific features of the organization of instruction could make up an entire book. But still, would it not be interesting to know which basic principles distinguish them from one another? And what the results of instruction using these principles are?

The next seven chapters are a theoretical description of psycho-physiological processes on whose basis reading can be accelerated, understanding of what has been read can be improved, and the activity of the brain can be intensified. Their titles are as follows:

- Chapter 2. Certain Features of the Reading Process
- Chapter 3. The Integral Algorithm of Reading
- Chapter 4. Understanding What Has Been Read
- Chapter 5. The Suppression of Articulation in Reading
- Chapter 6. Eye Movement in the Reading Process
- Chapter 7. Attention -- The Catalyst of the Reading Process
- Chapter 8. Reading and Memory

New scientific data from the fields of physiology, psychology, and other sciences are cited in these chapters. Experiments on recording the reader's eye movements before and after instruction are interesting. It has been proven that the efficiency of mental labor is increased with the use of the integral algorithm of reading. It is noted how research in this field has progressed in the interval between the two editions.

No doubts remain upon reading these chapters: speed reading is possible inasmuch as it is physiological; it does not hurt the person because it stimulates capabilities of the human brain that are normally hidden. Processes occurring in the "laboratory" of the brain become understandable, almost visible to the reader.

It remains only to begin independent learning by the methods proposed by the authors.

The correspondence course is calculated for 10 weeks of regular study 1.5-2 hours a day. That is a total of 100-150 hours.

What can be said about the lessons themselves and the description of the methods? The small amount of space they take up in a book whose direct goal is the independent learning of speed reading is somewhat surprising. They comprise 26 of the 175 pages, plus 12 pages of control text (auxiliary material). The instruction course is structured in the following way: initially the goal of the lesson is given; then exercises and then commentaries and explanations are introduced. As compared with other courses of instruction familiar to us, the exercises are few in number and not very diverse.<sup>3</sup>

This is perhaps more like a plan and methodological principles rather than detailed methods. For example, the lesson whose goal is to suppress articulation during reading recommends that several similar exercises tapping complicated rhythms while reading be performed for two weeks. At first the goal of understanding what is read is not posed, then the task becomes more complicated: the content of the text must be restated mentally after reading.

Detailed evaluation of the specific features of the method is undoubtedly a job for specialists. But proceeding (expressed in high style) from the specific features of the theory of cognition, in particular the law of necessary diversity, it seems simply from considerations of common sense that alternating exercises, varying them, and changing over from some studies to others during the lesson will activate learning. And ultimately it is boring to do the same thing week after week and finish working on one and the same technique -- for example, working only with Shulte tables which expand the angle of peripheral vision. The studies are not very efficiently distributed among the lessons. This may cause difficulties in organizing instruction.

So, what can the book give to that category of reader for whom the main thing is learning how to read rapidly?

Without a doubt, familiarity with the subject. The reader will know enough about the principles of speed reading and its psycho-physiological principles and how deficiencies in reading can be overcome; he will become familiar with the method of instruction. Nonetheless, the part of the book focused on forming speed reading habits seems to be underdeveloped. Incidentally, the book also does not give a convincing answer to the question of how many people have studied this method by correspondence and what results they managed to achieve. Their number, in theory, must be substantial: after all, this course has been published twice with certain changes (and now already a third time) in ZHURNALIST and in the first edition of the book. The authors must have accumulated extensive materials on this subject. The complete results of a survey conducted of those who were taught, mentioned in the introduction, would be all the more interesting. Results of the instruction of speed reading in schools are especially important. I would like to become acquainted with a thoughtful and careful analysis of this data.

The impression is given that the authors have presented only the "tops" of the work they have done and have left the "roots" -- as they say -- "out of the picture." However, the effectiveness of independent learning by books, without supervision, without feedback from teachers is by no means a settled question. Here, as in medicine, the principle of "Do no harm" is important above all. In order to dispel the light veil of doubt, a detailed and impartial analysis and verification of comparable results is necessary. And more attention should be given to organizing the practical part in the methodology itself. Otherwise, a useful undertaking is easily discredited.

Many thousands of people are being taught speed reading in our country today, and by various methods: 5,000 were taught by the method cited by the authors of the book under review; about 3,000 in Novokuznetsk; and a large number in other cities as well. Several books on speed reading have come out. Unfortunately, the two editions of the book by O. A. Kuznetsov and L. N. Khromov came out in 25,000 and 70,000 copies, absolutely inadequate for a large reading audience. The rest of the books are generally inaccessible for the wide masses. They are not even mentioned in the bibliography of the book being reviewed. But they exist! Many people were taught using them. Some developments have not been published at all up to this point. It is a great pity that readers cannot become acquainted with the methodology of Ye. G. Semenov and I. Z. Postolovskiy, who were among the first to begin instruction in the country and achieved good results.

At the present time, instruction in speed reading is unavailable to most of those who need it. An article on dynamic reading was published in EKO in 1980, and since that time letters come almost every month asking where and how a course of instruction can be taken.

Obviously, in order to make instruction really large-scale, experimental verification and comparative analysis of the instruction courses created is needed. Back in 1980 it was suggested that a comparison be made according to the following criteria: scale of use; accessibility; length of instruction; its results; and its cost. But it was not conducted even on a preliminary basis, although the need for comparison and mass distribution of the most successful methods, as they say, hits you in the face. A solution is seen in the mass distribution of large numbers of copies of different methods of instruction of speed reading so that they, like writing, are accessible to everyone.

#### FOOTNOTES

1. V.F. Vormsbekher, V.A. Kabin, "100 stranits v chas" [100 Pages Per Hour], Kemerovo Book Publishers, 1980.
2. See, for example: V.A. Borodina, "Desyat' urokov dinamicheskogo chteniya" [Ten Dynamic Reading Lessons], Leningrad, 1976; E.P. Kozlova, "Metodicheskiye rekomendatsii po obucheniyu effektivnomy chteniyu" [Methodological Recommendations on Learning Efficient Reading], Alma-Ata, Center of NTO [Scientific Organization of Labor], Ministry of Geology, Kazakhstan, 1977.

3. In the methodology of V. F. Vormsbekher and V. A. Kabin (Novokuznetsk Pedagogical Institute), for example, 1 lesson (there are 8 of them in all) offers 20 different exercises aimed at developing all the components of accelerated reading -- training of the visual apparatus, suppression of internal pronunciation, training of attention, and development of reading techniques. It devotes more attention to organizing studies and planning for time budgeting.

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## ORGANIZATION OF CARD FILE SYSTEM OUTLINED

Novosibirsk EKONOMIKA I ORGANIZATSIIA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 9, Sep 84 pp 177-182

[Article by A.T. Zlobin, candidate of economic sciences, Moscow: "The Pocket Information Unit"]

[Text] A well-thought out system of gathering and accumulating information makes our work easier and more efficient, and saves the time and labor of specialists. The basic requirements for such a system are: compactness; multiplicity of use; capability of reassembly, combination, and renovation; and convenience in work.

The format of the paper must be chosen first of all. In my opinion, the most convenient format is one quarter of a standard sheet of white writing paper (210 x 297.5 millimeters). It is not difficult to cut or tear the sheet of paper into four equal parts. This small sheet is easily visible and moreover sufficiently large -- it holds, for example, up to 2,500 characters of newspaper text. It also has one other quality of no small importance -- it does not require bulky briefcases or files.

The custom of using thick notebooks developed back in student years. I also used these notebooks in my time. But they are inconvenient to carry, a place is needed to keep them, and frequently they are discarded after a while. But after all, this is an irreplaceable loss since much valuable information which could be of use in future work is lost.

We will note that the sheet of paper of reduced format is usually filled up with information on one side. This eliminates the need to additionally copy the materials. Our newspapers, journals, and special publications contain much valuable information. It must be copied out from special literature. But now a newspaper page, for example, can be easily glued on the reduced standard sheet. It is better to use rubber cement or photographic glue which do not cause the paper to turn yellow.

It is important that the material be handy and easy to get oriented to. A block arrangement of materials is used to accomplish this. The filled-in small sheets are combined by topic in groups (blocks). These blocks of 15-20 sheets are fastened together with a paper clip and placed in special

holders. The pattern of the holder is shown in figure 1. Six to eight blocks are placed in each holder. The blocks can be easily removed from the holders and can also be kept safely in them.

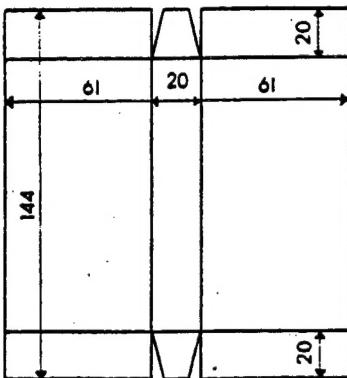


Figure 1.

The holders are placed in a storage box which consists of a bottom, two cross strips, and two side walls (figure 2). When the box is 90 centimeters long, 42 holders fit into it. This corresponds to a volume of approximately 5.5 million characters of newspaper text.

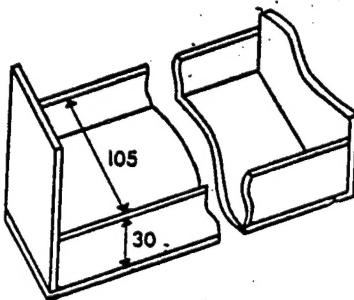


Figure 2.

One of the conveniences of such a design is that the holders can be moved around inside the box. At one time I used an ordinary card file with fixed compartments. But when I increased the volume of information kept in it, every time I had to move all the holders and change the classification numbers. A design with movable holders allows a permanent individual classification number to be attached to each of them. After a while the numbers are memorized and the time needed to find the necessary information is reduced.

The design, as we see, is very simple and uses available materials. I spent one day making the storage box and the set of holders for it, and the system prepared help save many weeks.

The foundation of the system is its classifier. It should be carefully thought out. It is better to spend some time and consider all the "pros" and "cons" rather than run up against the need to change the entire search system later.

I, for example, am interested in information on political economy and practical economics. This is also reflected in the classifier I developed.

As is well known, a method of production presupposes dialectical interaction between productive forces and production relations. They are given the classification numbers 1 and 2, respectively, in the classifier.

Productive forces (1) consist of components, each of which is given an individual classification number: objects of labor (raw materials, processed materials, semi-finished goods, and so on) used in social production (11); means of labor in the broad sense (buildings, structures, roads, canals, energy, and so on, besides the implements of labor) used in social production (12); implements of labor (machines, equipment, and so on) used in social production (13); organization of social production (14); people directly participating in the production process and those creating conditions for its conduct (15); and science used in social production (16).

In this way, general questions of forming the productive forces of society, their structures, and patterns and dynamics of development are collected in holder 1. Materials dealing with the general question of forming each of the enumerated components of productive forces end up in holders 11-16. For example, blocks dealing with the essence and content of the organization of production, its structure, features of development, and so forth settle in holder 14.

In practical work, the need frequently arises for even greater subdivision of information. Thus, there must be a separate holder for groups of numerous questions dealing with scientific organization of labor. Therefore, the organization of production has the corresponding classification numbers: organization of material preparation of production -- 141; organization of services of production -- 142; organization of technical preparation of production -- 143; organization of labor -- 144; organization of management of production -- 145; and organization of the basic production process -- 146.

In this way, all materials related to scientific organization of labor end up in holder 144. The following subjects will be gathered there: essence of scientific organization of labor; V. I. Lenin on scientific organization of labor; history of the development of scientific organization of labor in the USSR; and others which are broadly enough devoted to illuminating this problem as a whole. But it is often necessary to know narrower, more practical questions which characterize organization of labor at an enterprise or an institution. Therefore, it is advisable to continue subdividing.

To do this, organization of labor (144) must be represented as the totality of its own components, each of which is given a permanent classification number: conditions of labor -- 1441; procedures and methods of labor -- 1442; division

of labor -- 1443; labor cooperation -- 1444; labor discipline -- 1445; and organization of the work place -- 1446.

We see that this type of classifier makes it possible to make a smooth conversion from fundamental problems of political economy to applied questions of practical economics and organization of production. The question of the degree of subdivision of a problem is resolved individually in each case and related to those practical tasks on which the specialist is working.

A lot of holders should not be introduced immediately; it is better to organize only those which coincide with the problems of the work. Holders with new subjects can be enlisted "in reverse," as the need arises. When I began to work on this system, I only used 20 holders, but now there are almost 100 of them.

Yet another advantage of the system is that it enables the specialist to cover and use related questions. For example, you have been charged with preparing a report on the subject, "The Condition and Prospects of Introducing Brigade Methods of Organization of Labor in the Repair System of the Sector." In this case, you will naturally use materials from holders 1443 and 1444 which contain information on division and cooperation of labor and, in particular, on brigade methods.

Furthermore, you know that the organization of the repair system is part of the organization of services of production (142). And it is in turn represented in the classifier by a group of components, each of which has its own classification number: organization of the warehouse system (1421); organization of the energy system (1422); organization of the repair system (1423); organization of the transport system (1424); organization of household-domestic services for the collective (1425); and organization of monitoring of labor quality (1426).

As we see, materials on the organization of the repair system are contained in one holder (1423), but when preparing the report you must turn to other holders as well. When necessary, at a conference let us say, you can take the necessary holder with you as additional reference material.

For each holder, where it is possible, a standard set of blocks of information is used on the condition of the problem being studied: in the historical aspect; in sectors of the USSR national economy; in administrative-economic rayons of the USSR; in countries of the socialist community; and in developed capitalist countries. This list can be supplemented with any blocks needed for the work.

Since the filled sheets are combined in blocks with an ordinary paper clip in the top left corner, it is convenient to record the classification number of the holder where the sheet is "registered" on the upper right.

It is essential that each sheet have a reference to the source from which the information was borrowed. It is convenient to put the reference to the newspaper or journal text on the bottom of the sheet, under the text, and give it in abbreviated form. If the material is taken from a book but the

specialist keeps a personal card index of literature read, the card index number of each book is recorded on the bottom of the sheet. But if there is no card index, then the complete title of the source, the author's last name, the publisher, and year of publication must be indicated on the back of each sheet. Otherwise, it may happen that valuable information will lose its personal identification after a time.

Several mandatory rules must be followed when using the system. In the first place, the blocks in the holders must be systematically reviewed. Clearly outdated information must be ruthlessly removed. If this is not done, despite the systematic nature of the material, it will be difficult to use.

Secondly, blocks extracted from the holders must be returned to their places immediately after use. If they are pooled together in stacks, this nullifies all the advantages of the system.

Furthermore, everything interesting and new which is heard about or seen must be recorded and placed in the appropriate holder as quickly as possible. Otherwise, information which could prove invaluable in the work will be forgotten.

Finally (and this, perhaps, is the main thing), you must force yourself to work systematically with the information. In the beginning this is rather difficult, but within a short time the specialist will not be able to do without the system.

The labor invested in the system is paid back a hundred-fold: after spending 1-2 days, you will spare yourself the inefficient repetitious copying of one and the same material and the need to deal with thick notebooks, copybooks, and files.

You will be able to continually accumulate fresh, timely material. After all, it is no trouble to enter the needed information on a sheet of paper or clip parts of articles out of newspapers.

Thanks to the hierarchically structured classifier, materials on a very wide circle of questions can be accumulated, beginning with global questions of political economy and ending with local production tasks.

The specialist can fill out the materials using different subject blocks. Because of this, he will feel much more certain of himself: after all, he does not need to start everything from the beginning when he is preparing to develop a new theme, but only needs to work through those additional questions which are not yet in storage. Newly worked up sections will also take their places in one of the holders and can be of use many times in future work.

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